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THE ROLE OF STIMULUS AFFECT ON CONCEPT ATTAINMENT[1]

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There is a considerable body of literature to support the hypothesis that the utilization of stimulus cues in perception is partly determined by their emotional significance or affect. Although the relevant studies have already been summarized in a number of critical reviews (1) (3) (5), the general flavor of their content may be gathered from one of the first investigations carried out in this area. Schafer and Murphy (12) used as their stimulus materials two "facial profiles" that were obtained by drawing an irregular line through a circle, and then cutting the circle along this line. In the training period, subjects were rewarded with a small amount of money when one particular profile was presented, and punished by having money withdrawn when the other profile was presented. The two profiles were rejoined to make the original circle and the subjects were then asked what the total figure looked like to them. The subjects showed a marked tendency to perceive the previously rewarded profile as the "figure" and the punished profile as the "ground". These results suggested that perceptual organization is governed not only by so-called autochthonous or structural determinants but also by those behaviorial factors which reflect the idiosyncratic experiences of the subject. More particularly they suggest that in the process of perception people tend to utilize more readily those cues that are associated with pleasant rather than negative affect.

If, as Bruner (3) has suggested, the same basic mechanism underlies both perception and the higher cognitive functions, it should follow that the hypothesis just described should apply to concept attainment. Casting this hypothesis in formal terms, it is predicted that in the process of attaining a concept, the utilization of stimulus attribute values will be a function, among other things, of the association of such values with past reward and punishment. Attribute values associated with reward should be selected as concept-relevant, whereas attribute values associated with punishment should not. The experimental investigation of this hypothesis constitutes the subject of the present study.

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Experimental Design

The Sample—Ss consisted of 24 Edmonton Grade V children, one complete class from the University school. The children were divided into two groups, the experimental and contrast, matched on intelligence, Raven's Standard Matrices raw score, age and sex. Table I shows that the groups were not significantly different on any of these variables.

Procedures

1. Preconditioning—Negative preconditioning was accomplished by the use of punishment in the form of withdrawal of small chocolate candies. Ss were given 17 candies at the beginning of the experiment, they were permitted to eat two, and the remaining 15 were used in the "game". The "game" consisted of selecting a card from a pack of twelve cards placed face down and winning or losing candies on the basis of that choice. The experimental group was rewarded with one candy for selecting any card from the pack which bore red or green circles or a blank card, but they were penalized 5 candies for selecting either the black circle or square. The ratio of black to other cards was 1:5 and each subject was required to select a card 24 times. The expected number of punished responses was four. To minimize the effect of chance variation of the number of punished responses, Ss was taken in groups of six thus providing for some vicarious reinforcement.

The contrast group went through identical treatment with the exception that it was punished for selecting the blank card and rewarded for selecting any of the other red, green or black cards.

TABLE I

SIGNIFICANCE OF DIFFERENCES ON FIVE VARIABLES FOR TWO MATCHED GROUPS

		Contrast Group	Experimental Group	Obtained t or x^2	Level of Significance
N		12	12		
Age	X	10-8	10-10	$t = 0.63$	N.S.
I.Q.	X	122.66	121.25	$t = 0.28$	N.S.
Raven's	X	44.33	44.00	$t = 0.13$	N.S.
Sex	M	6	5	$x^2 = .18$	N.S.
	F	6	7		

2. Concept Attainment—Concept attainment tasks resemble those of Bruner, Goodnow, and Austin (4). Their tasks were designed to match as closely as possible the actual process of finding the attri-

butes or characteristics which define a concept. Bruner gives an example of a stranger being shown around a town by one of its inhabitants. In the course of his introductions several citizens are pointed out as being 'influential'. The stranger now has the problem of finding out what makes a man influential in this community. What are the attributes that define this class—wealth, education, age, religion? The stranger has to make a hypothesis as to what the defining attributes are and then confirm or reject the hypothesis on the bases of later instances or encounters with other 'influential' and 'not influential' citizens.

The experimental task involved in the present study consisted of presenting a series of positive and negative instances of the concept; the subjects' problem was to use the information given to the best advantage in finding the defining attributes of the concept. The tasks involve three attributes or dimensions, color, form and number with two values per dimension, red-black, circle-square, one-two figures. There were therefore, eight different cards. The task consisted of identifying which of the serially presented cards were exemplars of the concept. Each of the cards had one or more symbols drawn at random from the three bi-value dimensions. Reception strategy was employed, that is Ss had no control over the order of presentation. The order of presentation was randomized with the limitation that each card appeared once in each series of eight cards. The three specific concepts used for his experiment were: (1) red-squares, number irrelevant; (2) two figures, color and form irrelevant; (3) black-circles, number irrelevant. The order of presentation of problems was reversed for one-half of each group to reduce practice effects.

The cubicle for each subject contained a pile of cards used in the concept task and a response box. Each trial followed the same plan: Ss were requested to turn over the next card; they were then asked "Is this a 'blouff'?"* Ss could respond with either of two switches, one labelled "Yes", the other "No".** A correct categorization was reinforced with a green light, an incorrect categorization was followed by a red light.† Mechanical controls and inter-com instructions were handled from an adjoining room.

3. The general design of the experiment called for the preconditioning in the mornings. After an hour's break, the Ss were recalled for a familiarization with the concept attainment equipment and two trial problems. Later in the afternoon, Ss returned for the actual

*Imaginary word used to label the desired concept.

**The mechanical device used in the concept formation experiment was designed and built by Dr. S. Hunka.

†Another part of the experiment required feedback from Ss of hypothesis as to what they thought the "blouff" was.

concept attainment tasks. The experiment ran four consecutive days, the experimental group on the first and third, the control on the second and fourth days.

Results

All 24 Ss were employed in the analysis. The score for each subject was taken as the number of correct categorizations in seven blocks of eight trials each. The maximum score for any one problem was therefore, 56; actual scores ranged from 21 to 55. A graphical plot of the individual scores on the three problems showed that the distribution approximated normality, thus permitting parametric tests of significance.

Table II shows the means and standard deviations of the scores on each problem for each group.

TABLE II

MEANS AND SDs FOR THE TWO MATCHED GROUPS ON THE THREE CONCEPT ATTAINMENT TASKS

Group		Problem			Total
		Black-Circle	Two Figures	Red Square	
Experimental	Mean	38.67	44.75	41.00	41.47
	S.D.	8.39	8.06	10.60	
Control	Mean	49.25	47.92	47.83	48.33
	S.D.	3.61	4.35	5.91	
Total Group	Mean	43.96	46.33	44.42	

The effects of the two treatments on the three problems employed in this experiment were analyzed by the use of two-factor design with repeated measures on one factor (13, p.302). The results of this analysis are presented in Table III.

An examination of this table shows that the difference existing between these groups can be attributed to the experimental treatments, the experimental group scoring lower than the contrast group. The obtained F value may be somewhat inflated due to the lack of homogeneity of variance. Moreover the significant interaction term indicates that the experimental treatment had an effect specific to certain of the problems. This specific effect was examin-

TABLE III
SUMMARY OF ANALYSIS OF VARIANCE OF CONCEPT ATTAINMENT SCORES

Source of Variation	SS	df	MS	Obtained F, Fmax	Level of Significance
Between subjects	3340	23			
A (Treatments)	848	1	848	F = 7.50	$p < .02$
Subjects within groups	2492	22	113		
Homo. of variance		2,11		Fmax = 6.20	$p < .01$
Within subjects	1529	48			
B (Problems)	76	2	38	F = 1.30	N.S.
AB	165	2	82.5	F = 2.82	$p < .10$
B x subjects within groups	1288	44	29.3		
Homo. of variance		2,22		Fmax = 1.82	N.S.

ed by testing the simple main effects of the treatment on each of the problems (13, p.310). This procedure produced significant differences between the treatment group on Problem I (black-relevant) beyond the .01 level (F=11.73, df.+1,66); no significant difference (F=1.05) between the groups on Problem 2 (color irrelevant); and barely significant differences at the .05 level (F=4.88) on Problem 3 (color relevant). These findings must be considered as somewhat tentative in the light of the barely significant interaction which indicates that the experimental group scored somewhat consistently lower than the contrast even in Problem 2 on which the pre-conditioning should have no effect.

Discussion

The results of this study support the hypothesis that preconditioning an aversive response to a stimulus makes the stimulus less accessible for subsequent concept attainment tasks. The group negatively preconditioned to black had more difficulty in attaining a concept where black was relevant than did the matched contrast group. This finding is theoretically compatible with studies which have shown the importance of needs, affect and other such motivational variables on cognitive tasks (2) (12). Moreover, some support is given for the operation of mediated generalization. Not only did the preconditioning appear to have an influence when black was relevant but also when the general dimension, color, was relevant. In other words, the aversive response may have transferred from black to the more generic concept of color. This conclusion must, however, be considered as most tentative.

The present results have several implications for education, the main one being that not only does previous learning lay the groundwork for later learning in the classical transfer sense, but the emotional or affective aspects associated with previous learning have a marked influence on later learning. Material presented by the teacher is not responded to in a purely congnitive or academic manner; the child's response is determined considerably by his previous emotional or affective relationships with the various elements in the learning situation. It follows that if a child has had consistently unpleasant associations with algebraic symbols he will have more difficulty learning to manipulate them than would be expected if they were handled purely on the basis of their cognitive aspects. If the equality of vertically opposite angles has been consistently associated with frustration and unpleasantness, this affective response will inhibit clear thinking ability in subsequent similar geometry problems. Through mediated generalization the child may come to operate ineffectively and to actively dislike all arithmetic and perhaps even the teacher and school in general.

The findings of this study could be made more conclusive by having some independent measure of the effect of the preconditioning trials. If preconditioning could be continued up to some criterion (for example, by the use of some physiological index like the GSR) the differential between the groups could be attributed to the preconditioning with more certainty. A second limitation which may have interfered with the tasks was the difficulty these young children had in following the mechanical aspects of the problem, such as: "Shut off all switches; look at card number 16, when the white light comes on, push one of the switches marked Yes or No." Concentrating on these mechanical aspects may have detracted children's attention away from the task itself. It was also quite obvious that the Ss had difficulty in interpreting the meaning or getting any information when the red light came on because of an incorrect answer. For example, if a subject guessed an instance to be "No" (not a 'blouff') and he received a red light, he often failed to realize that it was a 'blouff' after all. This observation suggests that negative information is very difficult to utilize at this age. It may be one of the functions of the school to teach children how to get maximum information out of any presented fact or observation.

Summary

Twenty-four Grade V children were each given three different concept attainment tasks in an attempt to find the effect of negative preconditioning of certain of the relevant stimulus cues. Aversive conditioning to the stimulus black produced more errors in categor-

izing exemplars and non-exemplars of a concept where black was relevant. Moreover, aversive conditions to black appeared to have some effect on a concept where red was relevant, a consequence attributed to mediated generalization. These results may be used to show the complicating influence of affective variables on concept attainment tasks and school learning in general. Children do not respond exclusively on the basis of cognitive input; the reactions are modified by the motivational significance of the material to be learned.

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SOME PERSONALITY CHARACTERISTICS OF EDUCATION STUDENTS

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The Problem

A very useful comprehensive system of personality diagnosis has been outlined by Timothy Leary, in his book, "Interpersonal Diagnosis of Personality". (1)

One element in this system is the "Interpersonal Adjectival Check List" developed by R. La Forge and R. Suczek (3) in collaboration with Leary.

This check list is comprised of 128 adjectives or adjectival phrases ordered in 16 groups of 8. Each group of 8 adjectives or phrases is designed to measure behavior relevant to an "interpersonal reflex". In practice the moderate and extreme intensities of each "interpersonal reflex" are considered together so that we have 8 octants numbered 1 through 8 or alternatively AP, BC, DE, FG, HI, JK, LM, NO. These numbers or letters refer to the following "reflexes" respectively—Managerial-Autocratic, Competitive-Narcissistic, Aggressive-Sadistic, Rebellious-Distrustful, Self-Effacing-Masochistic, Docile-Dependent, Co-operative-Overconventional, Responsible-Hypernormal.

The octants are ordered as is shown in this classification circle (1, p. 65).

On the basis of the scores obtained on each of the octants two numerical indices are derived (via vector geometry); one, a measure of Dominance-Submission, the other, a measure of Love-Hate. The formulae used are:

$$LOV = LM - DE + 0.7\ (NO - BC - FG + JK)$$
$$Dom = AP - HI + 0.7\ (NO + BC - FG - JK)$$

These raw scores are converted to standard scores by Leary's norms. These two standard indices locate a subject's interpersonal behavior on a circular diagnostic grid, e.g., the following grid shows the location when Dom = 30 and LOV = 70. In this case the subject is ordered to the Docile-Dependent octant.

For further information recourse should be had to Leary's books (1,2).

The check list may be used either for self-rating or for rating others; in the present study it was used for the former purpose.

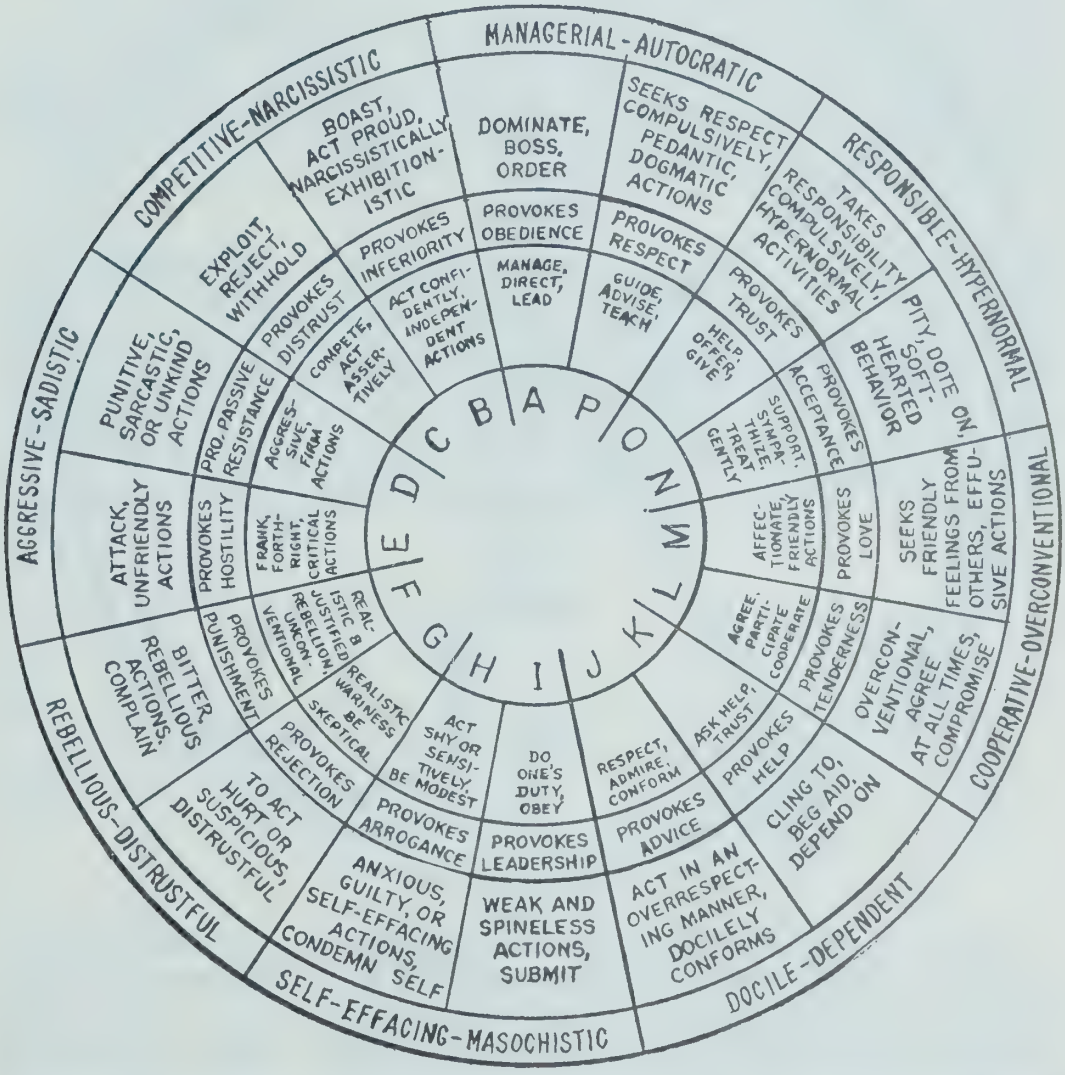

Figure 1. Classification of Interpersonal Behavior into Sixteen Mechanisms or Reflexes. Each of the sixteen interpersonal variables is illustrated by sample behaviors. The inner circle presents illustrations of adaptive reflexes, e.g. for the variable *A*, *manage*. The center ring indicates the type of behavior that this interpersonal reflex tends to "pull" from the other one. Thus we see that the person who uses the reflex *A* tends to provoke others to *obedience*, etc. These findings involve two-way inter-personal phenomena (what the subject does and what the "Other" does back) and are therefore less reliable than the other interpersonal codes presented in this figure. The next circle illustrates extreme or rigid reflexes, e.g. *dominates*. The perimeter of the circle is divided into eight general categories employed in *interpersonal diagnosis*. Each category has a moderate (adaptive) and an extreme (pathological) intensity, e.g., *Managerial-Autocratic*.

In view of the fact that the norms given for the check list by Leary (1) are taken from two samples, one an undifferentiated psychiatric sample of 86 males and 152 females (ages and conditions unspecified), the other a research sample whose nature and size is again unspecified (though it appears likely to be a conglomerate of several subsamples, psychiatric and non-psychiatric) it was thought useful to obtain norms on a sample of university students.

Method

Leary's first sample is used by him for the purpose of stating the mean and S.D.S. specified in Table 1. His second sample is used for the purpose of stating his norms (1, p. 495). We have used the same sample for both purposes.

Our sample of 200 (100 of each sex) was obtained by administering the check list, in class, under conditions of anonymity, to all available first year students taking the introductory course in Educational Psychology plus one class of third year students taking

a course in Personal Adjustment. The number was rounded to 200 by eliminating the six students who were the most extreme in age (our range was 18 through 47 years). The students were simply asked to check those adjectives or phrases which were true of them.

After the DOM and LOV scoring and norms were completed it ocurred to the writer that the choice of faculty by the students might involve certain personality biases and to check this the summary indices were calculated using both Leary's and the writer's norms.

Results

It will be seen from Table I that our sample of Education students differs from Leary's sample in the following ways. First, both males and females are more "dominant" than Leary's group, the females particularly so; second, both males and females are less "loving" than Leary's group. Both DOM differences are significant at the 0.001 level; the female LOV difference is significant at the 0.02 level but the male LOV difference is not significant.

TABLE I

DOM

	Mean	S.D.	N
Leary	—2.0 (males)	7.9 (males)	86
	—3.4 (females)	7.8 (females)	152
Frost	+2.79 (males)	6.06 (males)	100
	+0.19 (females)	6.00 (females)	100

LOV

	Mean	S.D.	N
Leary	—0.4 (males)	8.5 (males)	86
	+2.8 (females)	8.9 (females)	152
Frost	—1.44 (males)	7.09 (males)	100
	+0.23 (females)	6.98 (females)	100

Table of Norms

Following Leary's lead, the tables were constructed by assigning the standard score of 50, not to the exact value of the mean score in each case, but to an interval. Leary's interval was $\overline{X} \pm \frac{S.D.}{20}$, the S.D. being rounded to the nearest whole number. For example, his DOM Standard Score of 50 corresponds to the raw score interval of —2.5 to —.3.3. Each unit increment of standard score corresponds to an increment in the raw score of $\frac{S.D.}{10}$, so that a standard score of

51 corresponds to the interval —1.7 to —2.4 (The S.D. being equal to 8.0, rounded).

Similarly, as the S.D. in our sample is 6.0 for DOM and 7.0 for LOV (both rounded), the interval is 0.6 and 0.7 respectively.

For example, taking our male norms, the DOM standard score of 50 corresponds to the interval 2.5 to 3.0. The LOV standard score of 50 corresponds to the interval —1.7 to —1.1. The DOM standard score of 60 corresponds to the interval 8.5 to 9.0, i.e. one S.D. higher. The LOV standard score of 60 corresponds to the interval 5.3 to 5.9, one S.D. higher.

Therefore, in all, our norms run from +3 S.D. to —3 S.D., which equals a standard score range of 80 to 20.

TABLE II

INTERPERSONAL DIAGNOSIS ADJECTIVAL CHECK LIST
UNIVERSITY NORMS 1962

MALES

Standard Score	DOM		LOV		DOM		LOV		Standard Score
80	20.5	21.0	19.3	19.9	1.9	2.4	— 2.4	— 1.8	49
79	19.9	20.4	18.6	19.2	1.3	1.8	— 3.1	— 2.5	48
78	19.3	19.8	17.9	18.5	0.7	1.2	— 3.8	— 3.2	47
77	18.7	19.2	17.2	17.8	0.1	0.6	— 4.5	— 3.9	46
76	18.1	18.6	16.5	17.1	— 0.5	0.0	— 5.2	— 4.6	45
75	17.5	18.0	15.8	16.4	— 1.1	— 0.6	— 5.9	— 5.3	44
74	16.9	17.4	15.1	15.7	— 1.7	— 1.2	— 6.6	— 6.0	43
73	16.3	16.8	14.4	15.0	— 2.3	— 1.8	— 7.3	— 6.7	42
72	15.7	16.2	13.7	14.3	— 2.9	— 2.4	— 8.0	— 7.4	41
71	15.1	15.6	13.0	13.6	— 3.5	— 3.0	— 8.7	— 8.1	40
70	14.5	15.0	12.3	12.9	— 4.1	— 3.6	— 9.4	— 8.8	39
69	13.9	14.4	11.6	12.2	— 4.7	— 4.2	—10.1	— 9.5	38
68	13.3	13.8	10.9	11.5	— 5.3	— 4.8	—10.8	—10.2	37
67	12.7	13.2	10.2	10.8	— 5.9	— 5.4	—11.5	—10.9	36
66	12.1	12.6	9.5	10.1	— 6.5	— 6.0	—12.2	—11.6	35
65	11.5	12.0	8.8	9.4	— 7.1	— 6.6	—12.9	—12.3	34
64	10.9	11.4	8.1	8.7	— 7.7	— 7.2	—13.6	—13.0	33
63	10.3	10.8	7.4	8.0	— 8.3	— 7.8	—14.3	—13.7	32
62	9.7	10.2	6.7	7.3	— 8.9	— 8.4	—15.0	—14.4	31
61	9.1	9.6	6.0	6.6	— 9.5	— 9.0	—15.7	—15.1	30
60	8.5	9.0	5.3	5.9	—10.1	— 9.6	—16.4	—15.8	29
59	7.9	8.4	4.6	5.2	—10.7	—10.2	—17.1	—16.5	28
58	7.3	7.8	3.9	4.5	—11.3	—10.8	—17.8	—17.2	27
57	6.7	7.2	3.2	3.8	—11.9	—11.4	—18.5	—17.9	26
56	6.1	6.6	2.5	3.1	—12.5	—12.0	—19.2	—18.6	25
55	5.5	6.0	1.8	2.4	—13.1	—12.6	—19.9	—19.3	24
54	4.9	5.4	1.1	1.7	—13.7	—13.2	—20.6	—20.0	23
53	4.3	4.8	0.4	1.0	—14.3	—13.8	—21.3	—20.7	22
52	3.7	4.2	— 0.3	0.3	—14.9	—14.4	—22.0	—21.4	21
51	3.1	3.6	— 1.0	— 0.4	—15.5	—15.0	—22.7	—22.1	20
50	2.5	3.0	— 1.7	— 1.1					

TABLE III

INTERPERSONAL DIAGNOSIS ADJECTIVAL CHECK LIST
UNIVERSITY NORMS 1962

FEMALES

Standard Score	DOM		LOV		DOM		LOV		Standard Score
80	18.0	18.5	20.9	21.5	— 0.6	— 0.1	— 0.8	— 0.2	49
79	17.4	17.9	20.2	20.8	— 1.2	— 0.7	— 1.5	— 0.9	48
78	16.8	17.3	19.5	20.1	— 1.8	— 1.3	— 2.2	— 1.6	47
77	16.2	16.7	18.8	19.4	— 2.4	— 1.9	— 2.9	— 2.3	46
76	15.6	16.1	18.1	18.7	— 3.0	— 2.5	— 3.6	— 3.0	45
75	15.0	15.5	17.4	18.0	— 3.6	— 3.1	— 4.3	— 3.7	44
74	14.4	14.9	16.7	17.3	— 4.2	— 37.	— 5.0	— 4.4	43
73	13.8	14.3	16.0	16.6	— 4.8	— 4.3	— 5.7	— 5.1	42
72	13.2	13.7	15.3	15.9	— 5.4	— 4.9	— 6.4	— 5.8	41
71	12.6	13.1	14.6	15.2	— 6.0	— 5.5	— 7.1	— 6.5	40
70	12.0	12.5	13.9	14.5	— 6.6	— 6.1	— 7.8	— 7.2	39
69	11.4	11.9	13.2	13.8	— 7.2	— 6.7	— 8.5	— 7.9	38
68	10.8	11.3	12.5	13.1	— 7.8	— 7.3	— 9.2	— 8.6	37
67	10.2	10.7	11.8	12.4	— 8.4	— 7.9	— 9.9	— 9.3	36
66	9.6	10.1	11.1	11.7	— 9.0	— 8.5	—10.6	—10.0	35
65	9.0	9.5	10.4	11.0	— 9.6	— 9.1	—11.3	—10.7	34
64	8.4	8.9	9.7	10.3	—10.2	— 9.7	—12.0	—11.4	33
63	7.8	8.3	9.0	9.6	—10.8	—10.3	—12.7	—12.1	32
62	7.2	7.7	8.3	8.9	—11.4	—10.9	—13.4	—12.8	31
61	6.6	7.1	7.6	8.2	—12.0	—11.5	—14.1	—13.5	30
60	6.0	6.5	6.9	7.5	—12.6	—12.1	—14.8	—14.2	29
59	5.4	5.9	6.2	6.8	—13.2	—12.7	—15.5	—14.9	28
58	4.8	5.3	5.5	6.1	—13.8	—13.3	—16.2	—15.6	27
57	4.2	4.7	4.8	5.4	—14.4	—13.9	—16.9	—16.3	26
56	3.6	4.1	4.1	4.7	—15.0	—14.5	—17.6	—17.0	25
55	3.0	3.5	3.4	4.0	—15.6	—15.1	—18.3	—17.7	24
54	2.4	2.9	2.7	3.3	—16.2	—15.7	—19.0	—18.4	23
53	1.8	2.3	2.0	2.6	—16.8	—16.3	—19.7	—19.1	22
52	1.2	1.7	1.3	1.9	—17.4	—16.9	—20.4	—19.8	21
51	0.6	1.1	0.6	1.2	—18.0	—17.5	—21.1	—20.5	20
50	0.0	0.5	— 0.1	0.5					

When the summary indices are plotted the university group falls into the octants indicated in Table IV.

TABLE IV

INTERPERSONAL OCTANTS (LEARY'S NORMS)

	AP	BC	DE	FG	HI	JK	LM	NO	Σ
Univ. Male	21	43	8	7	6	2	4	9	100
Univ. Female	25	21	10	11	7	6	8	12	100
Σ	46	64	18	18	13	8	12	21	200
Σ%	23	32	9	9	6.5	4	6	10.5	100
Leary's Medical Control Group % (N = 41)	7	10	17	7	5	5	22	27	100
Leary's Psychiatric Clinic Admission Group % (N = 207)	12	10	18	10	9	11	15	15	100

TABLE V

INTERPERSONAL OCTANTS (STUDENT NORMS)

	AP	BC	DE	FG	HI	JK	LM	NO	Σ
Male	10	20	12	6	13	18	10	11	100
Female	11	16	9	14	9	15	12	14	100
Σ	21	36	21	20	22	33	22	25	200
Σ%	10.5	19	10.5	10	11	16.5	11	12.5	100

Discussion

It is interesting to compare the university students with two of Leary's groups. The first of the latter is a group of non-psychiatric hospital patients. The second a group of undifferentiated psychiatric patients tested on admission to the clinic. Perhaps the most significant difference is to be found in the large percentage of education students to be found in octants AP and BC and the small amounts to be found in octants HI, JK and LM. Thus teachers-in-training see themselves to be strong, competitive, authoritative types rather than as self-effacing, docile and cooperative within the framework of Leary's norms. It would be useful to discover whether or not students enrolled in other faculties perceive themselves similarly.

The octant distribution of the student sample (on Leary's norms) is significantly different at the 0.001 level of X^2 from an a priori expectation of even distribution throughout the octants.

When the summary indices are computed from the student's own norms a change of distribution naturally takes place as can be seen from Table V. This distribution is not (statistically) significantly different from the expected even distribution. However, two octants, BC as before, and, paradoxically, JK contain rather higher percentages than the others.

In conclusion we may note what Leary says about these octant types.

"Competitive, self-enhancing behavior pulls envy, distrust, inferiority feelings, and respectful admiration from others. In the language of the interpersonal system, BC provokes G H I J.

The adaptive person who uses this security operation in a sensitive manner wins the admiration and flattering envy of others. They look up to him and pay him the tribute of a grudging envious approval. It may be helpful to contrast the interpersonal world created by the competitive person with the response which the executive, dominating person (AP) provokes. The latter is more conventional and responsible in his use of power. He tends to train others to obedience or loving respect. The competitive person strives to impress others that he has what they want. There is

more disaffiliative motive in his approach and he generally receives therefore a passively hostile, negative submission." (1, p. 334)

"Docility pulls strong, helpful leadership from others. Dependence provokes nurturance—J.K. pulls AP and NO from others.

If a person acts in a poignant, helpless, respectful manner, he trains others to offer help, advice and direction. He who asks tends to get taught. These subjects tell others by means of their reflexes that they are weak-and-friendly. They thereby provoke others to be strong-and-friendly." (1, p. 293)

If, in fact, students presenting these descriptions behave, in the future, in the same way as they see themselves behaving now, we might well doubt their capacity to teach successfully.

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THE CONSTRUCTION AND USE OF A GUIDANCE ATTITUDE SCALE

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This article will introduce the reader to a locally constructed Guidance Attitude Scale and to report on some experimental findings on its use.

Purpose of the Attitude Scale and Theoretical Implications

Guidance programs have had relatively few evaluative studies to point out their strengths and weaknesses. It was partially in answer to this need that the Guidance Department of the Calgary Public School Board decided to investigate, by some reasonably scientific means, the efficiency of the guidance program in the schools. One way to evaluate the program would be to determine students' attitudes toward guidance. It would appear that should one wish to know how individuals feel about some particular psychological object, the best procedure would be to ask them directly. This might be a satisfactory approach in some instances when one wishes to classify groups into those with favorable attitudes, those with unfavorable attitudes, and those who are doutbful. Unfortunately, the reluctance of many individuals to express themselves publicly on some issues, especially in the school, seems to rule out this possibility. Edwards discusses an experiment with college students' attitudes toward proposed legislation intended to provide cash bonuses to war veterans. He states:

> "Half of the individuals interviewed were asked directly about their attitudes toward the bill. The others were given a sheet marked "Secret Ballot" and a pencil and were asked to check whether they were in favor of or against the bill. The ballot was then folded by the individual and inserted by him into a box plainly labeled "Secret Ballot Box". It was found that many more "don't know" responses were obtained by direct questioning than by the use of the secret ballot and that the proportion of individuals saying that they had unfavorable attitudes toward the bill was much higher for the secret ballot group than the direct question group."

Many people also have mixed feeling about certain issues. There may be considerable ambivalence present, and upon the spur of the moment and in response to a direct question, objectivity and insight may be lost. Payne in his book, "The Art of Asking Questions", also queries the value of this method.

Suggestions have frequently been made that the problem of investigating attitudes may be accomplished by direct observation of

behavior. This approach would require competent psychologically trained observers. In many cases, behavior is designed to conceal true feeling and in most instances there is no necessary one-to-one correspondence between overt behavoir and attitudes.

The usefulness of psychological tests in education and research are well known. Attitude scales, if well constructed, may be considered a psychological appraisal which will give a quick and convenient measure of attitudes of large groups of people.

An attitude may be defined as the degree of positive or negative affect associated with some psychological object. A psychological object means any symbol, phrase, person, institution or program toward which people can differ, with respect to positive or negative affect. Edwards states:

> "In the literature of psychology, the terms *affect* and *feeling* are used interchangeably. An individual who has associated *positive* affect or feeling with some psychological object is said to *like* the object or to have a *favorable* attitude toward the object. An individual who has associated *negative* affect with the same psychological object would be said to *dislike* that object or to have an *unfavorable* attitude toward the object."

A Guidance Attitude Scale, properly constructed, would then present the "feeling tone" of the student toward this area.

Construction of the Scale

In constructing the Guidance Attitude Scale, the method of paired comparisons was first suggested. However, if comparative judgments were to be made for each pair of statements, then judges would have to make $\frac{n(n-1)}{2}$ comparisons. One hundred statements would require 4,950 comparative judgments and this would appear to be too difficult a task; hence, the method of equal-appearing intervals was decided upon.

One hundred statements dealing with favorable and unfavorable attitudes toward Guidance were submitted for judges to rate. These statements were previously selected by guidance counsellors who had heard all of them expressed by students at one time or another. The statements were mimeographed with a pictorial continuum of favorability-unfavorability appearing below each item.

Forty-one Alberta educators, actively engaged in Guidance or concerned with the problem, were invited to act as judges. Superintendents, Supervisors of Guidance, Department of Education officials, Visiting Teachers and Active Counsellors, participated in the judging of items. They were asked to circle the letter that best described each statement on the unfavorable continuum as illustrated below, e.g. statement—"Guidance confuses students".

A B C D E F G H I J K

Unfavorable "Neutral" Favorable

The median or scale value and the Q value for each statement was determined and those items, whose semi-interquartile ranges were too great, were eliminated. A Q value of 2.5 was used as a criterion for discarding the item.

Forty-four statements were retained and twenty-two were placed in Scale A with comparable Form Scale B being construct-

TABLE I

A GUIDANCE ATTITUDE SCALE "A" WITH SCALE VALUES ADDED

Please place a check mark ($\surd$) in front of the statements you agree with. Those you do not agree with leave blank.

Scale Value		
2	( )	1. The help received from guidance is not usually worth the time or effort expended.
8	( )	2. Guidance has a definite influence for the better on pupils with poor behavior.
3	( )	3. Guidance has no influence on the poorly adjusted person.
9	( )	4. Guidance prevents many unpleasant situations; the idea that prevention has more value than cure.
6	( )	5. Some teachers think guidance is a waste of time; others think the counsellor can solve all problems.
1	( )	6. Most counsellor think they know it all.
11	( )	7. Guidance tries to answer and solve various problems that a student has such as vocational choice, study habits, adjustment, etc.
1	( )	8. Guidance confuses students.
8	( )	9. Guidance helps the student become better adjusted to his home and school life.
4	( )	10. Guidance should be in the hands of the classroom teacher who knows the pupil best.
11	( )	11. Guidance enables one to understand one's actions.
5	( )	12. Guidance is not as important as mathematics or science.
6	( )	13. Guidance helps some students but disturbs others.
10	( )	14. Proper guidance can affect the future success of a student.
5	( )	15. Guidance depends too much on the personality of the guidance teacher.
7	( )	16. Guidance counsellors have years of training and experience which is of help to us.
10	( )	17. Guidance helps individuals stabilize their own thinking.
2	( )	18. Guidance is so unrealistic when dealing with many problems.
9	( )	19. Guidance makes pupils feel they are important individuals.
3	( )	20. Most counsellors are poorly trained and do not help much in giving us educational and/or vocational information.
7	( )	21. When a pupil causes a disturbance in class he should be turned over to the guidance counsellor for counselling.
4	( )	22. In our schools we have received insufficient vocational information.

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ed of the remaining twenty-two items. Each scale then contained twenty-two items ranging in scale value from A (above—unfavorable) to K (above—favorable). Therefore, there were two items of each weight or value retained in Scales A and B. The Guidance Attitude Scale A is presented in Table I.

Reliability of the Scale

Table II indicates the reliability of the scale. Two different reliability measures were obtained. One coefficient was based on the test-retest correlation and the others used the split-half measure.

TABLE II

COEFFICIENTS OF RELIABILITY FOR A HIGH SCHOOL—GRADE XII SAMPLE

Year	N	Type of Coefficient	Coefficient r
1961	273	Split-half	.72
1962	212	Split-half	.85
1963	323	Split-half	.85
1963	110	Test-retest	.87

Coefficients of reliability ranged from .72 to .85 using the split-half approach and .87 with the test-retest correlation.

Validity of the Scale

No attempt has been made to determine a measure of empirical validity. The validity of this scale must be considered on a rational basis. This would imply that the test must have both measures of content and construct validity. The content validity of the scale is apparent because the judgments of qualified experts in the field of *guidance* were considered in its construction and in the selection of items. By the same token there is a degree of construct validity in the scale as well, because both content and construct validity are often closely interwoven. Since the terms concept and construct validity are used interchangeably one most search for guidance concepts in this scale. Each item in the test deals with guidance matters and the concept of guidance is constantly at the fore. Hence, the scale does have some degree of content and construct validity. Measures to determine empirical validity will be attempted later.

Experimental Findings

The Guidance Attitude Scale A was administered in three senior high schools in June, 1963. Only Grade XII students were sampled. The questionnaires were answered anonymously. It had been previously administered in 1961 and 1962, but no attempt had been made to appraise results. In analyzing the data a frequency count was made of each of the twenty-two items on the scale and the two items of the same value were combined, e.g., the two frequencies of scale value 2, and two frequencies of scale value 10, etc. Spearman rank difference correlations were obtained between an ideal rank order and the rank order based on frequency counts of each school. Table III indicates the correlation obtained.

TABLE III

RANK DIFFERENCE CORRELATION COEFFICIENTS BETWEEN AN IDEAL RANK AND RANKS OBTAINED IN THREE SCHOOLS

Ideal Rank	vs.	Rank Correlation Coefficients (rho)
School I	(N = 100)	.97
School II	(N = 140)	.77
School III	(N = 145)	.85

It would appear from this table that School I approximates the ideal rank much more closely than the other two and one would infer that the attitude toward guidance in School I is more favorable than the others sampled.

It is possible to determine the significance of differences between the coefficients by using Fisher's "z" transformation for correlation coefficients but this would have little value in the study. Therefore, in order to obtain the most information possible from the study, the results of the three schools were graphed (Figure I) against an ideal rank order and coefficients of profile similarity were obtained using the Du Mas Formula $rps = 2(S/T - .50)$. (rps=coefficient of profile similarity where S represents the number of corresponding pairs of segments exhibiting similar slope. T represents the total number of segments in the profile.)

In the facing figure, T=10 (total number of segments). In comparing profiles of School I and II, S=6, (corresponding pairs of segments exhibiting similar slopes) and

$$rps = 2(S/T - .50) \quad \text{(Du Mas)}$$
$$= 2(6/10 - .50) = .20)$$

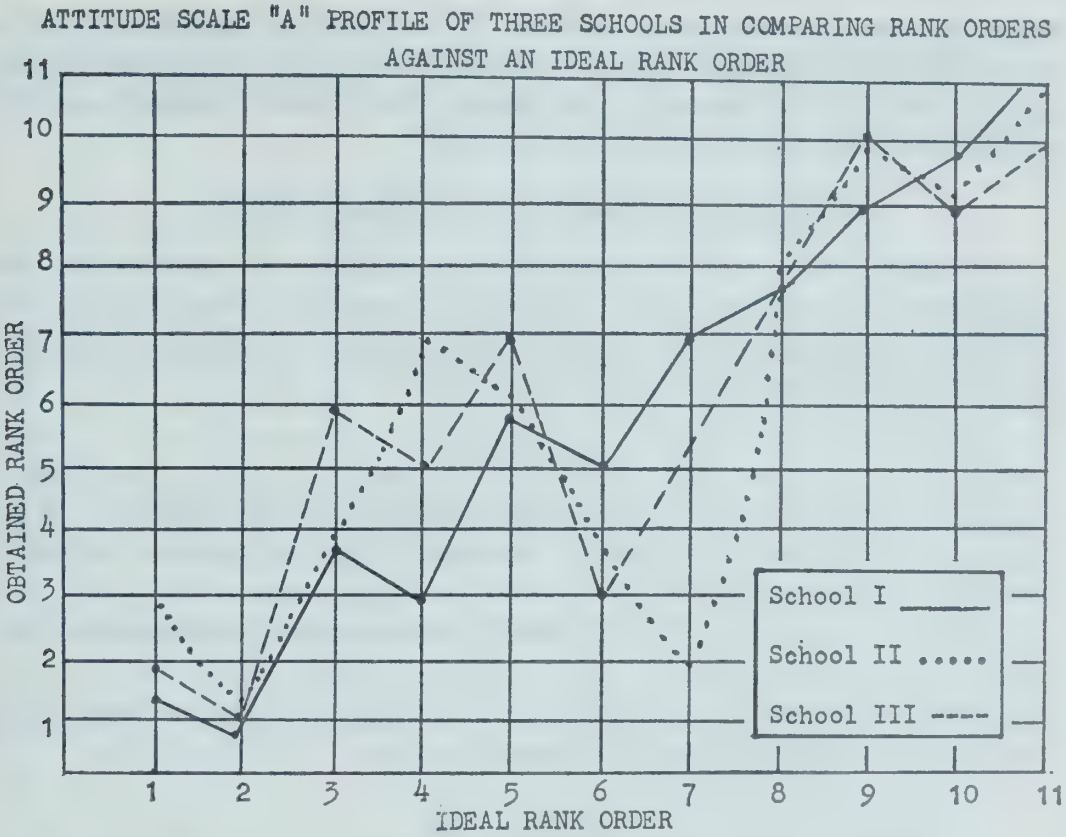
ATTITUDE SCALE "A" PROFILE OF THREE SCHOOLS IN COMPARING RANK ORDERS AGAINST AN IDEAL RANK ORDER
OBTAINED RANK ORDER
IDEAL RANK ORDER
School I
School II
School III

Table IV presents the values of the coefficients of profile similarity of the obtained data.

TABLE IV

COEFFICIENT OF PROFILE SIMILARITY (rps) BETWEEN THE THREE SCHOOLS IN THE SAMPLE

Schools	Coeff. of Profile Similarity (rps)
I vs. II	.20
I vs. III	.80*
II vs. III	.40

*rejected at 1% level.

The obtained values were checked against the results in the Du Mas Table[1] and the null hypothesis accepted or rejected. When T=10, rps must be at least .62 in order to reject the null hypothesis at the 5% level of confidence and .80 to repect this hypothesis at the 1% level of confidence. The null hypothesis in this case states that the true value of rps = 0 or that there is no similarity between profiles.

Under these circumstances, and by the novel use of a coefficient of profile similarity, it was noticed that School I and School III

1. Du Mas F. M.—"The Coefficients of Profile Similarity", Journal Clinical Psychology, Volume V, Number 2, 1949, pp 123-131, Table II, pp 130.

were not too dissimilar in profile. The general acceptance of a favorable attitude toward guidance in Schools I and III were determined from rank difference correlation, but School II lagged significantly behind in favorability.

Future Research on the Attitude Scale

Research will subsequently be conducted to determine the scalibility of these measures (Scales A and B) according to the Guttman criterion for unidimensional scales. Attempts will also be made to validate the scales empirically.

Summary

This article has introduced a Guidance Attitude Scale to measure a favorable or unfavorable feeling on the part of the students to guidance in the schools.

The scale appears to be reasonably reliable and valid for further experimentation purposes.

The use of a coefficient of profile similarity was introduced to assist in the evaluation of the obtained data.

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EXPERIMENTAL TESTS OF TWO HYPOTHESES CONCERNING NORMALIZATION* OF FORM PERCEPTION

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Problem

Experience with school difficulties and other types of learning problems has shown that visual memory is one of the important factors to be considered. Binet was obviously aware of the importance of visual memory in school achievement when making his intelligence scale, and consequently he included in his scale a "memory for designs" item which supposedly measured visual memory. The importance which Binet and his successors placed on visual memory is even more apparent when one realizes that this item was kept in the scale even though its biserial correlation with the total test is only .28 (McNemar, 1942, p. 178). But if visual memory is an important factor in academic achievement, and if the Stanford-Binet is a good predictor of academic achievement, then the correlation between a visual memory item and the total score of the tests should be high. There is obviously a paradox here. Either visual memory is not important in school achievement or Binet's "memory for design" item does not measure visual memory validly.

Jones' (6) factor analysis of the Stanford-Binet helps to somewhat resolve this paradox. Jones extracted ten factors from the matrix of item intercorrelations by the methods of centroid factor analyses described by Thurstone. Even though two of the ten factors he found are memory factors, neither of these factors has a significant loading on the "memory for design" item. Jones' "carefulness factor" which he suggests is a reflection of "the ability carefully and precisely to perceive the details of a spatial configuration" has a loading of .46 on this item. Consideration of Jones' findings seriously questions the unidimensionality of the skill measured by this item. Careful analysis of the item suggests that the skills involved include both perceptual and memory components. These skills involve perceptual discriminations in identifying and differentiating the figure. They also involve remembering. The memory, however, must be guided by accurate perception of the form.

It is generally agreed that the perception of form is dependent both upon the objective relationships of the stimulus qualities, and also upon the interpretations and organization given to these by the observer during the act of perception.

*Altering something in such a way as to make it normal or in accord with an accepted norm (English and English, 1958, p. 349).

Recognizing the jointly perceptual and memory nature of the "memory for designs" task has led the authors of this study to undertake the testing of the following hypotheses:

1. The tendency to normalize form perception is more intimately related to mental age than chronological age.
2. The extent to which students normalize form perception is inversely related to the degree to which a child has learned to verbalize.

One subsidiary aim was: to examine the significance of sex differences in the tendency to normalize form perception.

Related Studies

Using geometric forms, Bender (1) has made clinical interpretations of the development of copying in children. She found development in reproduction with age. However, she has not reported on the relation of this development to mental age.

Line (7) found growth in form perception with age and also with Spearman's "g". The observed inter-correlations for 150 children aged seven to fourteen years were: .74 between "g" and form perception; .36 between age and form perception.

Smith (9) generalized that, with an increase in age, perception is more complex. By this he meant that there is development in the ability to see and understand detail.

Townsend (11) postulated that copying skill was dependent upon a combination of form perception, from comprehension, and motor skill. He found correlation of copying with form perception to be significantly higher than the correlation of copying with any motor ability. He concluded from this that form perception may be considered as more influential in copying than motor abilities.

Osterreith (Vernon, 1952) found that when children of four years and upwards were asked to copy a complex meaningless figure, the drawings of the youngest children were extremely vague, and consisted of a few details dotted about irregularly. At later ages, the children made increasingly exact copies of details, but these were made without any idea of the pattern of the whole. Osterreith suggests that it seemed the child perceived the details separately, without any relation to one another, or to the total structure. It was not till eleven to twelve years of age that the child began to draw a structural whole within which the details were integrated. If the children were asked to find and recognize in the diagram parts drawn and presented separately, the younger ones identified the characteristic and outstanding details with fair ease. Less outstanding details were recognized from the ages of seven to nine years.

But the main outlines of the total structure were, however, not identified till nine to ten years of age. Vernon (12) in attempting to explain Osterreith's findings says:

> It seemed that the child as he grew older developed an idea of the general outline structure, and it was this that he perceived and recognized; whereas the younger child saw an undifferentiated mass dominated by a few outstanding details. (Vernon, 1952, p. 35).

Gestalt psychologists have pointed out the factor of similarity in the formation of a gestalt. Honkavaara (5) set out to show that the law of similarity does not function with the same force in the perceptual organization of a backward child as in that of a bright child. In order to do this she conducted a series of investigations with five to eight year old elementary school children. Her results suggest that the principle of similarity in grouping of similar objects, in grasping of figures formed by dots, and as a requirement of uniformity is connected with mental development, the younger children show poorer performances than the older ones, and also the backward children are poorer than the bright ones at the same chronological age level.

Experimental Design

Sample. The subjects used in this study were drawn from the University Clinic. During the three years prior to March, 1961, approximately 300 children were tested on the Stanford-Binet Intelligence Scale; of the 300 students tested, 189 attempted the "memory for designs" item. These students became the subjects of this study.

Cases referred to the Clinic for study come from all walks of life and in socio-economic status represent a fair cross-section of the population. The age range of the subjects was from five to seventeen years of age.

TABLE I

DISTRIBUTION OF SUBJECTS BY CHRONOLOGICAL AGE

	Age	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
N	Girls	1	2	4	8	14	11	9	10	3	4	0	0	1	67
	Boys	0	11	13	12	18	21	16	18	5	4	1	1	2	122
		1	13	17	20	32	32	25	28	8	8	1	1	3	189

Of the 189 subjects, 122 were boys and 67 girls. The mean S-B I.Q. was 105.69 and the standard deviation was 21.8. In an attempt to see if the I.Q. scores were normally distributed in the sample a chi-

square goodness of fit test was performed. The results of the test are shown in Table II and Table III. The value of X^2 is 7.47. On the basis of this chi-square it may be concluded that the sample was randomly drawn from a normal population.

TABLE II

CALCULATION OF NORMAL DISTRIBUTION FREQUENCIES FOR STANFORD-BINET I.Q.'s

Observed Frequency		Upper Limit	Deviation from Mean	Mean Standard Deviation	Proportion Below	Proportion Within	Expected Frequnecy
150-159	1)						
140-149	9)					.060	11
130-139	14	139.5	33.81	1.551	.940	.078	15
120-129	24	129.5	23.81	1.092	.862	.122	23
110-119	35	119.5	13.81	.633	.740	.172	32
100-109	46	109.5	3.81	.175	.568	.179	34
90- 99	24	99.5	— 6.19	— .284	.389	.159	30
80- 89	19	89.5	—16.19	— .743	.230	.115	22
70- 79	4)	79.5	—26.19	—1.201	.115	.115	22
60- 69	4)						
50- 59	4)						
40- 49	3)						
30- 39	2)						
Total	189					1.000	189

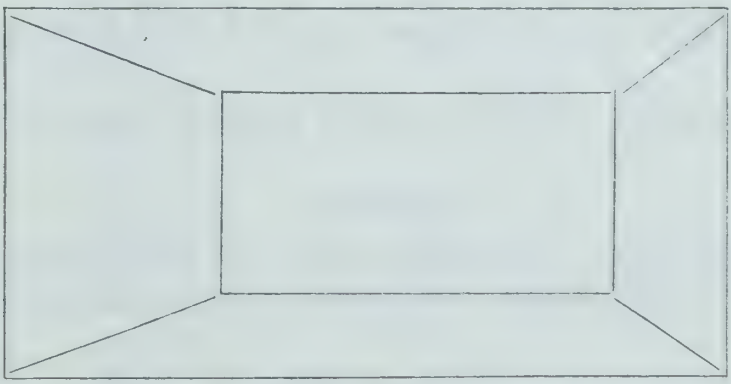
Presentation and Scoring. The 189 subjects were each given the Stanford-Binet Intelligence Scale in the usual manner. The intelligence scores were also calculated in the prescribed manner. Since it is the "memory for designs" item (Figure I) which is of concern in this study a brief explanation as to the manner of giving this item follows:

TABLE III

GOODNESS OF FIT OF NORMAL FREQUENCIES TO FREQUENCY DISTRIBUTION OF STANFORD-BINET I.Q.'s

I.Q.	140-159	130-139	120-129	110-119	100-109	90-99	80-89	30-79	Total
Observed Frequency	10	14	24	35	46	24	19	17	189
Expected Frequency	11	15	23	32	34	30	22	22	189
$f_o - f_e$	—1	—1	1	3	12	—6	—3	—5	0
$\frac{(f_o - f_e)^2}{f_e}$	.09	.07	.04	.28	4.24	1.20	.41	1.14	$X^2=7.47$

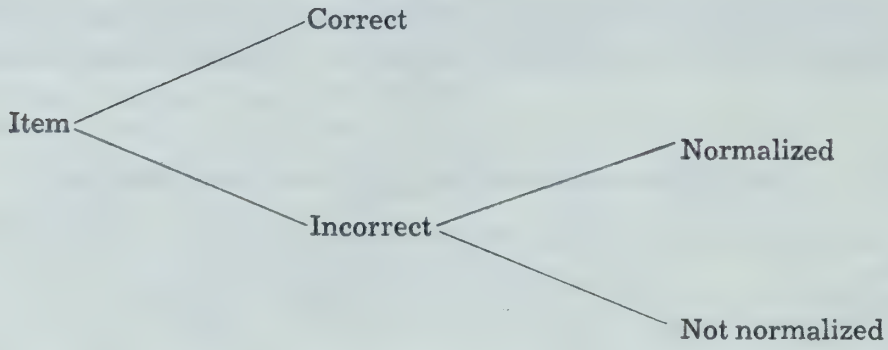
FIGURE 1.



After having given the subject paper and pencil the examiner introduces the test with the words: "This card has two drawings on it. I am going to show them to you for ten seconds, then I will take the card away and let you draw from memory what you have seen." (Terman and Merrill, 1960, p. 93). The card is then held for ten seconds at right angles to the child's line of vision. The subject reproduces the designs at the expiration of the ten seconds.

The plan of scoring this item was different from that suggested by the Manual of the Stanford-Binet in that only the one Figure (Figure I) was used and also only full credit or no credit was given. In the cases where no credit was given the raters decided whether this was because the subject normalized or did not normalize.

FIGURE 2.



In order to determine to what extent there may have been different scoring by different judges two independent judges were used. No difference was observed, and so there seemed little advantage in adapting a more detailed and unwieldy system.

An examination of the validity of this item was made by calculating the following scores:

1. point biserial correlation between M.A. and passing the item +.40
2. point biserial correlation between I.Q. and passing the item +.24
3. point biserial correlation between C.A. and passing the item +.16
4. Johnson's Index of Discrimination between high and low groups +.24

Findings

The means and standard deviation of the chronological age, mental age, and I.Q. for the 189 subjects of this study are reported in Table IV.

TABLE IV

MEANS AND STANDARD DEVIATIONS OF THE CHRONOLOGICAL AGE, MENTAL AGE, AND I.Q. FOR THE SAMPLE

	Mean	Standard deviation
C.A.	10 yrs. 5 mo.	2 yrs. 7 mo.
M.A.	10 yrs. 10 mo.	2 yrs. 10 mo.
I.Q.	105.7	21.8

TABLE V

MEANS AND STANDARD DEVIATIONS OF THE C.A., M.A., AND I.Q. FOR THE SUBJECTS WHO PASSED, AND THE SUBJECTS WHO FAILED BY GROUPS

	Passed (N = 63)		Failed			
			Normanlzed (N = 60)		Not Normalized (N = 66)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
C.A.	11 yrs. 1 mo.	2 yrs. 4 mo.	10 yrs. 3 mo.	1 yr. 11 mo.	10 yrs. 1 mo.	3 yrs. 2 mo.
M.A.	12 yrs. 5 mo.	2 yrs. 9 mo.	11 yrs. 1 mo.	2 yrs. 1 mo.	9 yrs. 0 mo.	2 yrs. 7 mo.
I.Q.	112.9	18.2	109.13	24.9	95.67	24.89

Sixty-three of the 189 persons tested were rated by the two independent judges as having successfully reproduced the figure. Of the 126 subjects who failed, 60 failed because they normalized and 66 failed for some other reason. The means and standard deviation of the chronological age, mental age, and I.Q. for the three groups are shown in Table V.

It is evident from an inspection of Table V that the mean I.Q. of the students who failed because they normalized is not significantly less than the mean I.Q. of the students who passed. The students who failed the item for some other reason have a mean I.Q. which is approximately 15 I.Q. points lower than either the normalizing or the passing group. A further inspection of Table V makes obvious the fact that although the mean I.Q. of the normalizing group is nearly identical to the mean I.Q. of the passing group the dispersion of I.Q. scores of the normalizing group is much larger. The F ratio of the two variances is 1.9. This is significant at the .01 level of significance. This finding would lead one to speculate that the passing group is a much more homogeneous group than the normalizing group. It is also obvious from this finding, as well as from an inspection of the original data, that some very bright subjects are failing the item because they normalize.

When the subjects who failed the item because they normalized are compared with those subjects who failed for some other reason the fact that the tendency to normalize is correlated with mental age becomes evident. The point biserial correlation coefficient between normalizing and mental age of the failure group is .39. The point biserial correlation between normalizing and I.Q. of the failures is .30 and the point biserial correlation between normalizing and chronological age is only .02. The difference in correlation between normalizing and mental age is significant at the .01 level of significance from that of the correlation between normalizing and chronological age. The first hypothesis is clearly upheld.

The second hypothesis was stated as follows: The extent to which students normalize form perception is inversely related to the degree to which a child has learned to verbalize. It is hypothesized that the subjects who pass the item verbalize (to themselves) somewhat as follows: "a small rectangle in a larger rectangle with lines from the smaller going out to the corners of the larger with the lines on the right shorter than the ones on the left." It is hypothesized that the subjects who normalize verbalize incompletely. Perhaps they say to themselves: "a small rectangle in a larger rectangle with lines from the smaller going out to the corners of the larger." But they fail to verbalize the last idea about the lines on the right side being shorter.

It is difficult to conceive a test which would accurately measure the degree of functional verbalization. However, it seems feasible to assume that the degree of verbalization is dependent upon vocabulary. Acordingly, I.Q. and vocabulary score were correlated for the normalizing group and the passing group. This was done for the subjects who had mental ages over twelve because these subjects should, on the basis of test theory, pass this item but failed to do so.

The product moment correlation between I.Q. and vocabulary for the normalizing group was .34 while the correlation between I.Q. and vocabulary for the passing group was .50. The difference between these two correlations is significant at the .01 level of significance.

A chi-square test was performed to determine whether the observed differences between the sexes, in tendency to normalize were significant. No indication of any difference was found.

Conclusions

1. The tendency to normalize form perception is more intimately related to mental age than to chronological age.

2. Students between the ages of seven and seventeen, who have mental ages over twelve years, tend to normalize form perception if they are relatively weak in verbalizing skills. Students between the ages of seven and seventeen who have mental ages over twelve years, tend to perceive form accurately if they have well developed verbalizing skills.

3. There is no sex differences in the tendency to normalize form perception.

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SOCIAL CLASS AND NINTH GRADE EDUCATIONAL ACHIEVEMENT IN CALGARY

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There has long been concern among educators about the influence of socio-economic status on the academic ability and achievement of the public school students (1). Ample evidence has been drawn from various U.S. studies to indicate correlations between these factors. The intention of this paper is to present some data on the Canadian Schools. The actual data for this article was drawn* from a larger study at present being carried out by the writers at the University of Alberta, in Calgary.** It is hoped that this presentation will be viewed tentatively until the larger sample has been examined for these relationships.

In many ways, the Canadian educational system is similar to the American. Both systems are committed to a publicly supported mass educational enterprise. In both countries, the education system serves as an important "ladder" for social and economic advancement. This "social ladder" is open to all students to the extent that they are able to meet the intellecutal and social requirements of the school system. The schools reward those individuals who successfully meet these expectations, and punish, through failure, those students who do not.

The assumption is commonly made that failure in the school system is primarily a product of low capacity in combination with an inadequate amount of academic motivation. However, studies of the American education system have indicated that social class is a major selective factor in the sorting-out process (2). Havighurst and Janke have shown that the failing group is likely to be drawn predominantly from the lower socio-economic groups in society (3). That is, there is a direct relationship between academic achievement and social position. I.Q. is usually found to have a similar, but less powerful relationship with social class position (4).

A study by Sexton (5) in a large American City found that there was a close relationship between achievement and I.Q. test scores, and parental income. Low income was directly related to low I.Q. and low achievement scores. As family income increased, so did the I.Q. and achievement scores of the students from those families.

*The material for this paper was prepared by Mr. D. Jensen, Mrs. A. Jeppeson, and Mrs. P. Westcott who are assisting in the larger study.

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> All schools above $7,000 (parent income) are achieving above grade level —All school below $7,000 income are achieving below grade level—In general achievement scores tend to go up as income levels go up (6).
> All income groups below $7,000 have (I.Q.) scores of less than 4.00 (or less than "C" rating). All income groups over $7,000 have ratings of better than "C" scores. (I.Q. scores) tend to go up as income goes up (7).

Sexton argues that achievement and I.Q. scores are primarily derivatives of the students' social class position. Despite this the scores are commonly used to judge a student's potential level of performance.

> I.Q. scores provide an easy answer to questions raised about the performance levels of lower income children. Those looking for an easy way out can claim that the blame for low achievement lies with the child and not with the school or the home or society. The child is simply not smart enough to learn much in school, and his I.Q. proves it(8).

The problem is not the tests themselves, but rather what Sexton feels to be their misuse in the placement of students. When low I.Q. and achievement scores are used to channel lower class children into preparation for subordinate vocational roles, the school may be fulfilling an important role in the reduction of social mobility.

> Those who devise these tests—are usually well aware of the limitations of their products. But school people rarely are; even when they are told that the tests do not measure native intelligence, they persist in acting as before, judging and categorizing students according to I.Q. scores, and what is presumed to be their built-in mental capacity—because these tests are persistently misused in schools, it would seem advisable to abandon their use, and their misuse, completely(9).

If this is true there is clearly cause for concern because it involves a subordination of the testers and their tests to the current goals and social values of the educational system. Clearly, this carries with it a serious risk of reification of these goals and values. The result might be a sort of "educational atrophy"; a reduced flexibility in the face of the institution's changing environment. This atrophy would tend to weaken the immense contribution which education should be making to the development of society. For this reason alone, the connections between social class learning and the dominant values of the educational system are worthy of further analysis.

In 1954, Jones found that the evidence for social class differences in tested intelligence was very clear cut, and also pointed to the fact that environmental opportunities substantially influenced intellectual development (10). Similarly, Kate H. Meuller and Jalm H. Meuller showed that parental occupation has an important bearing on the academic achievement of the students (11).

It has been found that the higher the status of the parental occupation, the higher is the achievement of the student from that family. To some extent, this derives from the importance of middle class values in defining the criteria of acceptable school performance. This influence is likely to mean not only judgment against the lower

class students, but judgment in favour of middle class behavior. This was noted in the Atkinson study which was concerned with grade XIII students in Ontario (12). The study explained that a large number of high school students with high ability did not go on to do University work.

> There were large numbers of individuals of high aptitude and creditable Grade 13 achievement. The indications are that better selection could improve substantially the calibre of University students (13).
> Of our most able in some aspects of aptitude and achievement, for example, little more than half go on to University: of our less able students, it is embarrassingly evident that too many do go on to University—one may even question the rightness of a system which seems to lead so many of our most apt and able youth directly and permanently into employment before they are educated to the limit of their ability (14).

The students who did go on to the University came mainly from higher income families, while those who sought employment after High School came from lower income families. In this case it is evident that social class factors favoured the advancement of higher income students with lower school achievement, and rejected the higher ability students from lower income homes (15). This inequitable distribution of educational opportunity is further compounded by the probability that the definitions of ability are themselves biased in favour of the middle class child.

The attitudes of the parents towards education represent one aspect of the attitudinal environment of the family which is usually related to its social class position. Clearly, this is likely to be of great importance in stimulating, or discouraging the motivation of the child to achieve in school. Stendler compared parental attitudes toward education with the socio-economic position of the family. He found that working class parents did not come to the school when asked to do so to discuss their child's school work. Middle class families were more inclined to accept the invitation and indicated that they expected greater achievement from their children. Hence pressure for achievement was openly present in the middle class grouping and apparently lacking in the lower class homes (16). Similar findings have been obtained in studies of academic motivations (17).

There have been several studies in various parts of the world which have indicated a clear relationship between the kind of grades received and the students' social class (18). Children from the higher socio-economic groups receive a disproportionate share of the higher grades, while those from the lower class groups receive more than their share of the low grades.

The middle class student is more successful in adapting his behavior to the demands of the school than is the lower class individual. Through frequent reinforcement and pressures from his parents the

middle class student learns to conform to the values of the school system. While he may not have high ability his family life has made him aware of the rules that govern success in the schools. He knows that his social behavior as well as his academic work are important elements in the grades he receives.

In contrast, the lower class child learns suspicion and hostility from his parents towards the values of the school. The behavioral expectations of his family and his friends encourage resistance to the values emphasised by the school. He tends to find the environment an alien one and responds with behavior which is inimical to his progress in the school.

Are these socio-economic factors important in Canadian society? Do the studies from other advanced industrial societies have relevance for the Canadian educational system? One Canadian study reported by Robbins suggested that there is a strong relationship between social class and the I.Q. of the student (19). This article focusses on the relationship between socio-economic position and public school achievement in the Calgary public schools.

Selection of the Sample

The major study is concerned with three samples from the total universe of public school boys who took the Grade IX Departmental Examinations in Calgary in June, 1962. The aggregate of the scores made by all the boys taking the examinations were converted into stanines by the Alberta Department of Education. A 100% sample of the boys in the lowest stanines (1 and 2) was selected in order to examine the factors involved in academic failure. In addition, a 100% sample was taken of the boys who obtained the highest stanines (8 and 9) to examine for factors involved in academic success. In order to avoid the problems inherent in using only extremely divergent groups, a fifty per cent sample of the middle stanine (stanine 5) was also selected. This preliminary study was concerned with the "high" and "low" performance groups on the Departmental Examinations. There were 208 boys in the "high" achieving group, and 133 in the "low" achieving group. A random sample of fifty boys was selected from each of the high and low groups for this exploratory analysis.

The Hypotheses

The following null hypotheses were drawn up in order to examine the relationships between socio-economic status, income and high or low school performance.

1. There is no significant relationship between the socio-economic position of the family and the achievement level of the son.

2. There is no significant relationship between parental income and the achievement level of the son.
3. Parental income is not significantly related to occupational status of the family.

The Findings

Null Hypothesis 1. There is no significant relationship between the socio-economic position of the family and the achievement level of the son.

TABLE I

THE NUMBER OF BOYS IN "HIGH" OR "LOW" ACHIEVEMENT GROUPS ACCORDING TO THE OCCUPATION OF THEIR FATHERS

Parental Occupation	Aggregate Achievement "High"	"Low"	Total
Non-Manual	45	11	56
Manual	5	39	44
	50	50	100

$X^2 = 44.2$ (1d.f.) $P < 0.001$

From this table it can be seen that there is a significant relationship between the socio-economic position of the family and the success or failure of the son in the school. If these same proportions are found in the larger study, it would indicate that the manual worker's son has a very minimal chance of being successful in his school career. The data indicate that the father's occupation is a major factor in the success or failure of the student. This becomes even more evident when others aspects of the data are examined.

Null Hypothesis 2. There is no significant relationship between parental income, and the achievement level of the son.

Once again the null hypotheses is rejected. Even when the "cut-off" point is high ($6,000 per year), the joint income of the two parents is an important factor in the boy's success or failure in the schools. While it is generally acknowledged that low income is an important factor in the school "drop-out" problem, it is not usually discussed as an important factor in the student's actual school ability. Too often, the assumption is made that lower economic position and

lower innate potential are related. Present psychology, genetics and sociology are not yet able to provide a definitive answer to this problem. However, current research and theory indicates that much more weight ought to be placed on social factors as determinants of performance than was once believed possible (20).

TABLE II

THE NUMBER OF BOYS IN "HIGH" AND "LOW" ACHIEVEMENT GROUPS ACCORDING TO THE JOINT INCOME OF THEIR PARENTS

Joint Parental Income	Aggregate Achievement "High"	"Low"	Total
Above $6,000	37	12	49
Below $6,000	13	38	51
	50	50	100

$X^2 = 23.6$ (1d.f.) $P < 0.001$

There is the possibility that these relationships are due to factors other than the relationship between income and school success. The larger study being undertaken in the *Calgary Project* will attempt to analyze the many factors which are said to be involved in academic success. However, the present study was concerned only with the income and socio-economic variables involved in the failure-success pattern in the schools. With this in mind, the authors sought to further clarify the income and achievement relationship within each social class grouping. The following tables were drawn up to consider these factors.

TABLE IIA

THE NUMBER OF BOYS FROM *NON-MANUAL* FAMILIES IN "HIGH" AND "LOW" ACHIEVEMENT GROUPS ACCORDING TO THE JOINT INCOME OF THEIR PARENTS

Total Parental Income	Aggregate School Achievement "High"	"Low"	Total
Above $6,000	37	7	44
Below $6,000	8	4	12
	45	11	56

TABLE IIB

THE NUMBER OF BOYS FROM *MANUAL* FAMILIES IN "HIGH" AND "LOW" SCHOOL ACHIEVEMENT GROUPS ACCORDING TO THE JOINT INCOME OF THEIR PARENTS

Total Parental Income	Aggregate School Achievement		
	"High"	"Low"	Total
Above $6,000	1	4	5
Below $6,000	4	35	39
	5	39	44

Both Tables IIA and IIB suggest that there is a relationship between parental income and school achievement, which is not dependent on social class factors. The small expected values in the two contingency tables precludes the use of X^2 as an indicator of the substantive importance as well as the statistical significance of the exhibited differences. This statement is made on the basis of differences. It should be viewed with caution until the results of the larger study are known.

Hence, even within the social classes, the income level of the family appears to have a bearing upon whether the son will "fail" or perform at a high level on the ninth grade examinations.

Null Hypothesis 3. Parental income is not significantly related to the socio-economic position of the family.

TABLE III

A COMPARISON OF SOCIO-ECONOMIC POSITION AND TOTAL PARENTAL INCOME

Father's Occupation	Total Parental Income		
	Above $6,000	Below $6,000	Total
Non-manual	43	13	56
Manual	6	38	44
TOTAL	49	51	100

$X^2 = 36.5$ (1d.f.) $P < 0.001$

The null hyothesis is rejected. A marked relationship may be seen between social class and parental income. There are only six families where the total working class income is above $6,000, while there are 43 non-manual families with incomes above $6,000.

The big difference in income between the manual and non-manual families may be caused by a larger incidence of working wives in the non-manual group. When working and non-working mothers in the two social classes are compared we find the following groupings.

TABLE IIIA

A COMPARISON OF THE NUMBERS OF WORKING WIVES WHO HAVE "MANUAL" AND "NON-MANUAL" WORKER HUSBANDS

	Father's Occupation		
	Manual	Non-manual	Total
Wife working	12	14	26
Wife not working	32	42	74
	44	56	100

$X^2 = 0.0004$ not significant

These figures would show that there is no relationship between a working wife and the husband's socio-economic position. Consequently, we can be sure that our rejection of null hypothesis 3 has not been due to the "intervention" of a relationship between socio-economic position and differences in the proportion of mothers who go out to work.

Discussion

The data indicate a strong relationship between social class factors and school performance. They further point up the importance of higher family income, regardless of social class, as a significant correlate of school achievement.

Having established the presence of these relationships in the preliminary study the writers recognize that they do not preclude the possibility of intervention and contamination from correlated biases. In the larger study these will be reduced or removed by cross-tabulation. However, the very great differences which the contingency tables have brought to light seem to provide acceptable evidence for the presence of causal relationships.

When social and economic forces limit the educational advancement of a large segment of the school population, various means of rationalizing the problem are traditionally employed. Among the more accepted approaches are measures which "objectively" test the academic achievement and "I.Q." of the student population. The screening devices which are used in schools serve to reinforce the social class patterning of the school system. They seem to be surprisingly effective as barriers to social and economic advancement within the society where the manual worker's son has a very minimal possibility of success in the school system.

It has been pointed out in the introductory discussion that several studies have indicated a high relationship between social class variables and academic achievement and I.Q. In general there have been very few studies of these relationships undertaken in Canadian society. This may perhaps stem from a tendency towards the rejection of social stratification as a major problem in Canadian life.

The structuring of a school's curriculum, and its devices for determining who shall be rewarded or failed, are frequently based on cultural judgments of human behaviour, rather than on objective evidence of innate capacity. There seem to be reasonable grounds for suggesting that early assessment of student "ability" serves as much to reinforce social stratification as to enlarge social and economic opportunity in a society.

Sexton has argued that, "much of the debate over education today, no matter how distantly related it may sometimes appear, can be reduced to a simple contest between 'mass' and 'élite' education" (21). The early channeling of students into different academic patterns is one of the traditional foundations of an élitist educational system. European education has long reflected this value position. It is a position which essentially holds that man, "en masse" is unfit for advanced educational development. Educational and economic opportunity are available mainly to the ruling élite, who are viewed as hereditarily and socially superior. This is very far from the value assumptions of North American society, although, as this study emphasises, not necesarily for from its practice.

Summary

This minor study has been offered as a preliminary report on some of the relationships which are beginning to appear in the major study. The findings may be summarised in the following terms:

1. There was a strong relationship between social class and school performance.
2. Sons of manual workers have a relatively poor chance of sucessful academic achievement.

3. There appeared to be a relationship between joint parental income and school performance within the social classes.
4. The relationship between income and occupation was very strong, indicating the presence of a coherent social class structure in the community.

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21. Sexton (1961), p. xiii.

VALUE CONGRUENCE AMONG INDIAN AND NON-INDIAN HIGH SCHOOL STUDENTS IN SOUTHERN ALBERTA

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This paper compares the orientations of Indian and non-Indian high school students in Southern Alberta to certain values which are closely associated with an urban, industrial way of life.

Students of urban life such as Simmel and Wirth have delineated a number of value themes which are held to be associated with urban living conditions.[1] Included are what may be termed both positive and negative values when judged in functional terms. Among the positive values mentioned are *rationality,* which may be defined as a tendency to use intelligence rather than sentiment in one's reactions to people and situations; *calculation,* or the tendency to use people and situations as means rather than as ends in themselves; and *reserve,* or the tendency to withold intimate contact and identification with people in order to minimize the difficulties of maintaining an organized and integrated private self. Among the negative values mentioned are *isolation,* or the feeling of being abandoned by people in general; *withdrawal* of affect, or a feeling of despair concerning the possibility of maintaining meaningful relationships with others; and *resignation,* or a fatalistic acceptance of whatever fate has in store, since the universe does not yield to mastery by mankind.

The object of the present inquiry was to ascertain the extent to which Indian and non-Indian students held these respective values as well as the extent to which members of the two populations differed vis-a-vis one another. To employ more formal terms, it was hypothesized that owing to traditional cultural differences Indian students would be less likely to have internalized the positive values and more likely to have internalized the negative value themes than would their non-Indian peers.

Description of the Population sampled

In order to test the foregoing hypothesis, two alternative sets of data were gathered. The first set of data was gathered by means of a questionnaire which was designed to elicit information concerning attitudes and values held by both Indian and non-Indian students enrolled in high school. The second set of data was gathered by

1. Kurt H. Wolff, ed., *The Sociology of Georg Simmel,* Glencoe: The Free Press, 1950, pps. 409-424, and Louis Wirth, "Urbanism as a Way of Life," *The American Journal of Sociology,* XLIV, pps. 1-24, July, 1938.

means of follow-up interviews taken one year later with a total of 30 more or less randomly selected Blood Indian students previously surveyed.

The high school students involved in the survey included both Indian and non-Indian students attending the partially integrated high school located in Cardston, Alberta, as well as Indian students attending a number of denominational residential schools on the Blood and Blackfoot reserves. A total of 115 Indian and 335 non-Indian students comprised the two respective samples.[2] These totals represent the usable returns from the questionnaire which was circulated among the entire student body enrolled in each of the respective schools. In no instance was the usable response rate below 80 per cent of the total student body.

In terms of basic composition the two populations showed some difference in respect to age, sex, class standing in high school, rural-urban residence, and father's educational achievement.

Differences in sex composition were minimal, with males predominating slightly over females in either instance. With respect to age, the Indian population showed a considerably higher average age than did the non-Indian. In terms of class standing, the Indian population bulked larger in grades IX and X, with markedly smaller numbers in grades XI and XII, as compared with a much more uniform distribution over the four grades among non-Indian students.

In regard to rural-urban differences in residence, the relative proportion of Indian students residing on farms was approximately twice as large as that among non-Indians. Further, only a small proportion of the Indian students lived in either a town or a city, as compared with more than half of the non-Indian students.

Respecting father's educational achievement there were again marked differences. The Indian population had a much larger proportion of students whose fathers had completed only elementary school or less than did the non-Indian population. Also, more Indian than non-Indian students gave a "don't know" response to the question pertaining to father's educational achievement.

The Survey Data: I. The Positive Values

In order to determine the degree to which respondents held the rationality, calculation, and reserve values a set of three statements embodying these respective value themes was formulated for presentation and evaluation by the students. The statement embodying the rationality value was worded: "Nowadays it is the person who

2. The total N of 115 Indian students includes 9 Blackfoot Indians attending a partially integrated school in Gleichen, Alberta, and 4 students from the Blood and Blackfoot reserves attending partially integrated schools in Calgary.

uses his head rather than his heart that gets ahead and is looked up to!". This statement is identified as Statement No. 1 in Table I. The calculation value statement was worded: "Nowadays you have to think about what you can get out of other people and not worry too much about how they feel or what they think of you!". This statement is identified in Table I as Statement No. 2. Finally, the statement embodying the reserve value theme was phrased: "Nowadays it is better not to get too friendly with people because they will use what they know about you to take advantage of you!" This statement in turn is identified as Statement No. 3 in Table I.

TABLE I

POSITIVE VALUE POSITIONS RESPECTING GENERAL INTER-PERSONAL RELATIONSHIPS RANKED IN ORDER OF THEIR PREFERENCE

VALUE STATEMENTS	POPULATIONS					
	Percentage Affirmative		Percentage Negative		Percentage Undecided	
	Indian N=115 %	Non-Indian N=335 %	Indian N=115 %	Non-Indian N=335 %	Indian N=115 %	Non-Indian N=335 %
Statement No. 1	61.7	47.4	18.2	34.6	20.0	17.6
Statement No. 2	28.7	8.0	51.3	86.5	20.0	5.0
Statement No. 3	22.6	17.0	56.5	68.9	20.8	13.7

The Rationality Value:— Table I shows that the proportions of students responding affirmatively to the statement embodying the rationality value were 61 per cent among Indians and 47 per cent among non-Indians. The difference is statistically significant. Apparently, then, a clear majority of Indian students endorse rationality as a value, while among non-Indian students this value was endorsed by less than half of the students. Thus the value appears to be more widely held among Indian than among non-Indian students. From the standpoint of the Indian's preparedness for full participation in Canadian society at large, therefore, this finding appears to provide some basis for optimism.

Cross tabulation of the responses to the rationality statement with certain background or demographic characteristics bearing upon sex, class standing, residence, father's educational achievement, and age gave a number of significant relationships. Among non-

Indian students endorsement of the rationality value was independent of differences in sex, class standing, residence, father's educational achievement, and age. In the Indian population, however, students whose fathers had completed more than elementary school were significantly more often inclined to endorse the rationality value than were students whose fathers had completed only elementary school or less. The remaining characteristics showed no relationship to the response pattern whatsoever.

This finding is probably accounted for on the basis of a greater degree of aceptance of non-Indian values among the better educated Indian parents who in turn emphasize the value of rationality in the rearing of their children. To the extent that the better educated Indian parents are also younger than the average among Indian parents, this finding would suggest an increasing rate of acceptance of rationality as a value in the Indian community as a whole.

The Calculation Value:— Table I shows that the proportions of students responding affirmatively to the statement embodying the calculation value were 28 per cent among Indians and only 8 per cent among non-Indians. The difference is again statistically significant. Again, from the standpoint of Indian adjustment to Canadian society at large this finding would appear to constitute grounds for optimism in that a significantly larger proportion of Indian students hold values consistent with an urban way of life than is the case among their non-Indian peers.

Cross tabulation of the responses to this statement with the demographic variables showed that in the Indian population responses to the statement were entirely independent of differences in sex, class standing, residence, father's educational achievement, and age. In the non-Indian population, however, boys were significantly more often inclined to endorse the value than were girls, and older students responded affirmatively more often than did younger students.

This finding is probably explained on the grounds that boys are more fully exposed to competitive situations as well as situations calling for an aggressive response than are girls. In consequence, the value is held more intensely and explicitly than would be the case among girls. Similarly, older students, having had wider experience with their own failings and folly in dealing with others to whom they have extended a degree of trust, probably have a more explicit conception of the value and hold it more intensely than do younger students.

Nevertheless, from the foregoing it is clear that the calculation value is held more uniformly among Indian than among non-Indian students.

The Reserve Value:— Table I shows also that the proportions of students responding affirmatively to the statement embodying the reserve value were 22 per cent in the Indian population and 17 per cent in the non-Indian population. Again, the difference is statistically significant. From this finding it is apparent that while the proportions of students responding affirmatively is slight in both populations, Indian students are nevertheless better prepared to participate in an urban way of life than are their non-Indian peers.

Cross tabulation of the responses to this statement with the demographic variables showed no relationship with differences in sex, class standing, and residence in the Indian population. Indian students whose fathers had completed more than elementary schooling, however, were more inclined to endorse the value than those whose fathers had completed only elementary school or less. Similarly, younger students more frequently endorsed the reserve value than did older Indian students. In both instances differences were significant at the .05 level of confidence.

In the non-Indian population responses to this statement have a significant relationship only in connection with differences in sex. In this instance, boys endorsed the reserve value more frequently than did girls, with the difference being significant at the .05 level of confidence also.

The finding that younger Indian students as well as Indian students whose fathers have completed more than elementary schooling are more prone to endorse the reserve value than others again suggests a growing acceptance of non-Indian values and standards of conduct among the better educated and younger generation of Indian parents. The finding that non-Indian boys more frequently endorse the reserve value than do non-Indian girls again in all likelihood is accountable on the basis that boys are more frequently faced with competitive situations and have learned accordingly that the maintenance of an attitude of reserve provides a measure of protection against one's competitors.

The Survey Data: II. The Negative Values

Again, in order to determine the extent to which the respondents held the three negative values a set of statements embodying these respective values was formulated for presentation and evaluation by the students. The statement embodying the isolation value was worded: "Nowadays people aren't interested in you as an individual; they don't care what happens to you because they are so busy thinking of themselves!". This statement is identified as Statement No. 1 in Table II. The withdrawal value statement was worded: "Nowadays there is no point in trying to make good friends because things

change so fast and people move around so much that you can't keep your friends anyway!". This statement is identified in Table II as Statement No. 2. Finally, the statement embodying the resignation value was phrased: "Nowadays there is no point in planning for the future because everything is too uncertain to make planning worthwhile!" This statement is correspondingly identified in Table II as Statement No. 3.

TABLE II

NEGATIVE VALUE POSITIONS RESPECTING GENERAL INTER-PERSONAL RELATIONS RANKED IN ORDER OF THEIR PREFERENCE

VALUE STATEMENTS	POPULATIONS					
	Percentage Affirmative		Percentage Negative		Percentage Undecided	
	Indian N=115	Non-Indian N=335	Indian N=115	Non-Indian N=335	Indian N=115	Non-Indian N=335
	%	%	%	%	%	%
Statement No. 1	34.7	33.7	50.4	53.4	14.7	12.5
Statement No. 2	12.1	5.3	72.1	91.0	15.6	3.2
Statement No. 3	7.8	4.8	74.7	90.7	17.3	5.3

The Isolation Value:— Table II shows that approximately one-third of the students in either population endorsed the statement embodying the isolation value. The proportions were 34 per cent among Indian students and 33 per cent among non-Indian students. The difference is not statistically significant.

This finding is surprising only in the degree of consensus it reveals between Indian and non-Indian students. That a proportion of the students in either population should feel isolated is not at all inconsistent with general knowledge about the strains and stresses which accompany adolescence in all modern industrial societies. That the proportions of students endorsing the isolation value in the two populations are approximately equal suggests that Indians have become assimilated to the point where their culture generates tensions and conflicts similar to those found in Canadian society at large.

Cross tabulation with the demographic variables showed no significant relationships in the Indian population whatsoever. In the non-Indian population the only significant relationship occurred in connection with sex differences. Boys were more frequently in-

clined to endorse the statement embodying the isolation value than were girls. The difference is statistically significant at the .05 level of confidence.

This finding is undoubtedly explained on the grounds that boys in Canadian society are subject to greater stress during puberty and adolescence than are girls. The absence of a corresponding relationship in the Indian population is probably accounted for both on the basis of slightly higher average age among the students and a somewhat greater permissiveness concerning sexual taboos in the Indian community.

The Withdrawal Value:— Table II shows also that the proportions of students responding affirmatively to the statement embodying the withdrawal value were 12 per cent among Indian students and 5 per cent among non-Indians. The difference is statistically significant. Clearly, the entirely marginal nature of the proportions in either population who endorse this value provides little cause for alarm. Nevertheless, the fact that a significantly larger proportion of Indian than non-Indian students endorsed the value suggests that when all things are considered Indian students may in some cases and in certain respects face greater adjustment difficulties than their non-Indian peers.

Cross tabulation of the responses to the withdrawal value statement with the demographic variables showed no significant relationships whatsoever among non-Indian students. In the Indian population, however, girls endorsed the value more frequently than did boys, and younger students endorsed it more frequently than did older students. Differences are significant at the .05 level in either instance.

The finding that Indian girls endorse the withdrawal value more frequently than boys is probably accountable on the basis that in the Indian population girls are somewhat more mobile than boys. They more readily and frequently leave the reservation to live elsewhere than do boys for a number of reasons, not least of which is the greater ease and facility in adjustment to non-Indian behavioral standards associated with the female role. It is not altogether surprising therefore that among the females remaining on the reservation a somewhat larger proportion should have been adversely affected by the consequences of such mobility than would be the case among Indian boys. The finding that younger students endorse the withdrawal value more frequently than older ones is probably accountable on the basis of the fact that they are newly enrolled in high school with resulting separation from friends and associates which they had cultivated in the lower grades. The data do not, however, permit a firm conclusion in this respect.

The Resignation Value:— Table II indicates that the proportions of students giving an affirmative response to the statement embodying the resignation value were altogether marginal, being 7 per cent among Indians and 4 per cent among non-Indians. The difference is not statistically significant. Here again, the essential similarity between Indian and non-Indian students is strikingly evident. The marginal character of the percentages indicates that the proportions of students who are badly adjusted in their outlook on life is remarkably low in either of the two populations.

Cross tabulation of the responses to the resignation value statement with the demographic variables disclosed no significant relationships whatsoever in either of the two populations.

The Interview Data

In view of the fact that the foregoing survey data bearing upon both positive and negative values devolved upon a limited number of projective questionnaire items, it was felt that interview data would be necessary in order to permit an adequate test of the hypotheses which inspired the present inquiry. Accordingly, follow-up interviews were taken one year later with a randomly selected sample of 30 Blood Indian students who had been previously surveyed.[3] These data show, even more fully than the foregoing survey data, that the values herein termed positive are widely held, while those termed negative are held by only a marginal proportion of the students interviewed.

The widespread recognition of the fact that without adequate education or technical and vocational training opportunities for geographic and status mobility, for occupational choice and job-security are extremely limited attests the dominance of rationality as a value among the students. Professional or industrial employment is seen not only as a way of improving one's standard of living, construed in the broadest sense of the term, but also as a way of making new friends and realizing one's self through making a contribution to the welfare of others. Moreover, many of the students reported persistent parental pressure to take advantage of educational opportunities for the greater freedom of occupational choice which they provide. It is evident, therefore, that rationality as a dominant value is widely endorsed by members of both the older and the younger generations of Blood Indians.

The disclosure in the interview data that Indian students, like their non-Indian peers, increasingly want professional jobs such as nursing, teaching, architecture, law, etc., attests the presence of calculation as a major value. The reasons given by students for desir-

3. The interviews were taken by Violet Vicheck and Elsie Zaykowski.

ing such jobs is that they provide an opportunity to live and work either on or off the reserve as they may wish. Further, there is clear evidence that many younger Indians place little positive value upon their Treaty rights. Indeed, many of them hold the Treaty in contempt and argue that Indians would on the whole be better off if they had no rights of this kind. For if the Treaty rights were revoked or suspended, many of them believe, Indians would be provided with a needed stimulus to take up the challenge of maintaining themselves as non-Indians do. Finally, they see an immediate connection between the existence of their Treaty rights and conditions on the reserve associated with these rights and what they symbolize. Both are seen as barriers to their own efforts to be recognized in terms of their own objective worth as individuals when judged by non-Indian standards. They feel that if they are ever to achieve recognition on the basis of individual worth and merit, the stereotyped images held by the non-Indians must somehow be annihilated. And they seek ways and means in their personal plans and life ambitions to bring about such a state of affairs.

The widespread prevalence of reserve as a value is attested by the interview data also. Many of the students interviewed recognize the existence of adjustment problems which they face as Indians, both on and off the reserve. They are prone to cite both personal conviction and parental admonishment concerning the need to avoid involvement with certain "undesirable' 'elements in the Indian community itself who drink alcohol to excess, become involved with law enforcement agencies, and constitute nuisances to their families and their neighbors. Alternatively, very few of the students expressed a serious lack of confidence concerning their ability to adjust to the world outside the reserve. The belief is quite common that non-Indians in general are not prejudiced against Indians in general; rather, it is only the exceptional non-Indians who hold prejudice for certain Indians who by their behavior give all Indians an unsavory reputation. Such individuals, whether Indian or non-Indian, can be adjusted to by simple avoidance.

Again, many of the students who were interviewed, particularly the females, gave evidence of growing sensitivity and embarrassment concerning the physical and aesthetic appearance of their own homes. The order, tidyness and cleanliness of non-Indian homes is familiar to them and they find their own homes lacking in this respect. Many of them indicate that they refrain from bringing their non-Indian friends to their homes not because of difficulty stemming from personal or cultural differences, but because of differences in the physical and aesthetic standards. Such attitudes and feelings

are directly linked with the widespread desire to adopt non-Indian standards and to leave the reserve.

Respecting the incidence of the negative values, *i.e.*, isolation, withdrawal of affect, and resignation, the interveiw data served only to confirm their virtual absence from the lives of the students. On the contrary, the interview data clearly showed that increasingly the students are identifying with a wider life which beckons to them from beyond the boundaries of the reservation. Their favorable relations and experiences with many of their teachers, school officials, and persons employed by the various governmental agencies has done much to give them a feeling of self-confidence, acceptability, and optimism concerning their personal future in Canadian Society. Finally, the students appear to be almost entirely devoid of the more or less characteristic tendency among many preliterate people to assume a passive, cooperative attitude toward nature and society as contrasted with an adherence to the value of active mastery characteristic of nearly all modern peoples. The younger generation of Indians would appear to have given studied acceptance to these same values and beliefs. Moreover, they appear to be convinced that if they take advantage of the opportunities now within their grasp they can succeeed in escaping the blight and depression which has characterized the lives of their immediate forebears.

Discussion

The foregoing review of the data leaves no doubt that the hypothesis which inspired the study is not supported by the findings. On the contrary, it is clear that Indians, particularly members of the younger generation, who reside on the Blood and Blackfoot reserves are rapidly adopting certain values which are dominant in the larger containing society. Examination of the survey data relating to the positive values, *i.e.*, rationality, calculation, and reserve, showed that Indian students endorse these values more commonly and more uniformly than do their non-Indian peers.[4] The interview data confirmed these conclusions. It would appear to follow from this that Indian students are on the whole better prepared *at the value and attitudinal levels* to make an effective adjustment to urban living conditions than their non-Indian counterparts. Alternatively, the data bearing upon the negative values, *i.e.*, isolation, withdrawal, and resignation, again showed a surprising similarity between Indian and non-Indian students. The interview data again confirmed that

4. A sample of 193 non-Indian students attending a public high school in an upper middle class area in the City of Calgary who were polled in a more recent survey on the statements discussed above gave responses which were not significantly different from those given by the non-Indian students attending the Cardston High School. These findings would appear to lend added weight to the present conclusion.

these negative values, so commonly associated with ethnic or racial minority status, appear to be all but absent in the Indian population. In their stead it was found that the younger generation of Indians exude a remarkable optimism, self-confidence and self-assurance concerning their future.

Taking the data as a whole there is no doubt that the younger generation of Blood and BlackFoot Indians are better prepared for full participation in Canadian society at large than has been generally recognized. It remains only to bring public policy and school practice in line with these developments in order to make it possible for the new generation of Indians to fully realize their own potential contribution to Canadian society. Failure to do so may very well result in a future shift in Indian status from a depressed and passive cultural minority to that of a militant and aggressive racial minority differing little from the negro minority in the U.S.A.

THE LEADER BEHAVIOR OF PRINCIPALS, STAFF MORALE AND PRODUCTIVITY

B. T. Keeler and J. H. M. Andrews

Introduction

The manifest function of education in the public schools is to produce changes in children—changes in knowledge, skills, attitudes and behaviors. There is a great variation in the convictions held by various individuals as to what knowledge, skills, attitudes and behaviors are desirable and which ones are objectionable. Nevertheless, any evaluation as to what is good or bad in education must be based, in the final analysis, on the degree to which the school produces those changes in children which are designed by the society in which it operates. This applies to any aspect of education, be it in the realm of administration, curriculum, supervision, finance, school plant or teacher preparation.

It is widely assumed that morale is a causal factor in productivity. Although there is some empirical evidence tending to question this assumption, it is treated by many persons as if it were a sociological law. If it be, in actuality, a law, application to the educational situtation would be entirely valid. Such application has been suggested in a publication of the American Association of School Administrators (1), which lists "better staff morale" as one of five "intermediate results" which might be measured as a substitute for the difficult appraisal of the effects of learning experiences that emerge in the lives of boys and girls.

A second widely-held assumption is that the behavior of the leader of any formal group determines, or at least affects in large measure, the level of morale of the group. Again there is some empirical evidence which casts doubt on the validity of this assumption as well as on some supporting it.

A third popular assumption is that there is a strong relationship between the behavior of the leader and productivity. This assumption is often made independently of the other two—that is leader behavior affects productivity without necessarily doing so through morale.

It was the object of the study reported here (14) to test the assumptions that the behavior of the principal in a school is a factor in the level of teacher morale, and that morale of a staff is a factor in the level of the achievement of the pupils. Since data assembled to test these two assumptions permitted the testing

of a direct relationship between leader behavior and productivity such a test was also made.

Design of the Study

In order to test the hypotheses with which the study dealt, forty-six schools were selected on the basis of a measure of productivity.

Two instruments, one designed to measure staff morale and the other designed to measure leader behavior, were administered to the staffs of the schools in the sample. The instruments provided scores on two dimensions of leader behavior of the principal (as perceived by his staff) and two dimensions of staff morale for each school. Interrelationships among the five variables were demonstrated by statistical analysis.

Instrumentation

Productivity. A productivity index was derived from Alberta grade nine departmental examination results and a scholastic aptitude test. The aptitude test used was the Cooperative School and College Ability Tests (SCAT), which grade nine pupils write at the same time as the departmental examinations. This instrument is reported as having a reliability co-efficient (equivalence) of .95. (5).

The second factor in the productivity index was the aggregate score on examinations, which are set annually by the Alberta Department of Education and written by all grade nine students in the province. These marks are the official measure of the productivity of Alberta schools at the grade nine level. The examination in each subject is prepared by experts in that subject to conform to a set pattern and the examinations are widely accepted by educational authorities in the province as having high content validity. They also appear to have substantial predictive validity: see Black and Ulmer (2) and Black (3). There is no direct evidence on the reliability of these examinations except that implied by the evidence of validity. However, the examination marks correlate highly with SCAT, which itself has a high reliability as noted above. In the present study, the correlation between SCAT scores and average aggregate grade nine Departmental examination results was .79.

The school productivity measure, then, was based on the average aggregate of the grade nine pupils in a school, with the difference in academic aptitude test scores partialled out.

It will be noted that only one dimension of school productivity is tapped by this measure. Professional educators have been vocal in pointing out that much of the productivity of the educational

system cannot be expressed in terms of examination results and the present writer would agree with this point of view unreservedly. However, this belittling of "marks" has gone on to such an extent that it has become almost socially unacceptable to say that such results measure productivity at all. Nevertheless, in practice, examination results constitute by far the most usual basis for evaluation of students. It is not the intention here to err in the opposite extreme; it is, however, a basic assumption of this study that examination results constitute a valid measure of certain of the educational outcomes, or productivity.

Leader behavior of the principal. The instrument chosen for measuring the leader behavior of the principals was the Leader Behavior Description Questionnaire (LBDQ). This instrument, developed by Halpin and others (4,6,7,10,11,12,13,18), has already been employed in a variety of situations with noteworthy success. The LBDQ is designed to measure the two principal dimensions of leader behavior, Initiating Structure-in-Interaction (S) and Consideration (C). Structure-in-Interaction is defined as "a consistency in behavior occurring during interaction that permits the prediction of the behavior that will occur in future interactions." (12, p.96). Initiating Structure is, therefore, originating or tending to create this consistency. As the concept is used in the LBDQ, it refers to the behavior of a leader in outlining his relationship with the group, and in trying to set up patterns of organization and channels of communication within the group. "Consideration refers to behavior that reflects friendship, mutual trust, respect and warmth in the relationship between the leader and group members." (10, p.175).

Morale of the teaching staff. An instrument, named the Keeler Scale for the Cohesiveness and Induction of Teaching Staffs (KESCITS), intended to measure two group dimensions, Cohesiveness (CO) and Induction (I) was developed for use in this study. It is assumed, for the purpose of a theoretical framework for the study, that Cohesiveness and Induction are two independent dimensions of morale. By the term induction is meant the group phenomenon which, considered in the individual, may be called goal orientation. Goal orientation is the extent to which the goals of the individual are identical with the goals of the organization. It is assumed that the induction of a group is the sum of the goal orientation of its members. By the term cohesiveness is meant the group phenomenon which, considered in an individual, is called belongingness. Cohesiveness is a resultant of the sum of the forces tending to draw the members of the group together, minus the sum of the forces tending to draw the members apart. It is assumed that the co-

hesiveness of a group is the sum of the belongingness of its members.[1] (8).

Selection of Sample. In order to test the hypotheses, a sample of schools was selected. The population from which these schools were chosen was defined by the following limitations:

(1) Location: only schools which were neither isolated, nor parts of a large urban system and which were located in the province of Alberta.

(2) Size and scope: only public and separate schools, having from five to seventeen classes and offering grades one to twelve inclusive were chosen.

(3) Tenure of Principal: only schools having had the same principal for at least three school years, including that in which the study was conducted.

At the time of the study, there were one hundred seventy-nine schools of this description. A sample of forty-six schools was selected on the basis of Productivity, twenty-three schools above the mean and twenty-three schools below.

Of the forty-six schools selected, forty-two agreed to participate, a percentage of 91.3. The investigator or his representative visited each of the schools and administered the LBDQ and KESCITS to each staff. Approximately one half-hour was found adequate with each group.

In order to minimize, as far as possible, the chances of an effect on the findings because of extraneous variables, an attempt was made to select schools of high and low productivity in such a manner that the two groups did not differ significantly in size of school, training of principals, or experience of the principals. In the course of the study, information was obtained directly from the staffs to enable the comparison of the two groups on per cent male staff, per cent single staff, average number of days absent, average teacher training, average teacher experience and average tenure of present staff. Application of t-tests to each of these items showed no significant difference between the high and low groups.

Results. The index of productivity was calculated on the basis of 1959 examination data. For the purposes of the analysis, the schools were divided into two groups on the basis of the Productivity (P) scores, with a "high" group of twenty and a "low" group of twenty-two. It should be emphasized that these terms, high and

1. The development of KESCITS included two small pilot studies in Edmonton schools. Considerable confidence was established in the Cohesiveness ($r' = .88$, $N = 8$) measure with less confidence in the Induction measure ($r' = .71$, $N = 6$). Whole test reliabilities (by the split-half method) of the final version were .67 for Cohesiveness and .72 for Induction ($N = 374$). Space limitation precludes a more detailed discussion.

low, are only relative to the fixed mean of the population from which the sample was drawn. In actuality, the distribution of the P scores of the sample closely resembled that of the population, and the distribution did not vary significantly from that of the normal curve.

Pearson's product-moment correlation for each pair of variables was calculated.[2] These are given in Table I. Correlations between Productivity and Consideration (C) and Initiating Structure (S) were significant at the .01 level, and those between Productivity and Cohesiveness (CO) and Induction (I) were significant at the .05 level. Consideration and Initiating Structure correlated with one another at a very high level, in fact the highest coefficient of any in this group. Considerably lower than this, but still significant at the .01 level, was the correlation between Cohesiveness and Induction. The only other correlation of this group which was significant was that between Initiating Structure and Cohesiveness.

TABLE I

CORRELATION MATRIX FOR PRODUCTIVITY, CONSIDERATION, INITIATING STRUCTURE, COHESIVENESS AND INDUCTION
(N = 42)

	P	C	S	CO	I
P	.....	.416**	.420**	.279*	.300*
C	.416**	.....	.635**	.123	.097
S	.420**	.635**	.....	.279*	.096
CO	.279*	.123	.279*	.....	.396**
I	.300*	.097	.096	.396**	.....

*significant at the .05 level

**significant at the .01 level

The significance of the correlations between Productivity and each of the other variables bears out two of the basic hypotheses, that leader behavior is related to productivity and that staff morale is also related to productivity. From the correlation between Initiating Structure and Cohesiveness, it might be argued that a principal who behaves in such a way as to set up and maintain

2. Although, throughout the analysis and dicsussion which follows, the LBDQ and KESCITS scores are submitted to the same statistical treatments, it is to be understood that KESCITS is in an early stage of development, with validity and reliability largely undetermined, whereas the LBDQ is a mature instrument backed up by extensive use in research, including considerable data on reliability and validity.

patterns of goal attack thereby develops a certain amount of unity in his staff. This contention, though supported by the evidence of this study, cannot be taken as proven without a great deal more investigation.

Multiple Correlation of Productivity With Other Variables

Multiple correlation was used to show the relationships between Productivity and the two dimensions of the LBDQ, between Productivity and the two dimensions of KESCITS, and between Productivity and all four other variables. These data are given in Table II, together with all other multiple correlations with combinations of the dependent variables. The coefficient of correlation with the LBDQ dimensions was .46, significant at the one per cent level of confidence; that with KESCITS dimensions was .35, which barely fails to reach significance at the five per cent level; the correlation coefficient for the relationship between Productivity and all four of the other variables was .54, which is significant at the .01 level. The best pair was Initiating Structure and Induction with a correlation of .50, significant at the .01 level.[3]

TABLE II

MULTIPLE CORRELATIONS BETWEEN PRODUCTIVITY AND CONSIDERATION, INITIATING STRUCTURE, COHESIVENESS AND INDUCTION
(N = 42)

Variables	Multiple Correlation	Significance Level
C, S	.462	.01
C, CO	.475	.01
C, I	.491	.01
S, CO	.452	.05
S, I	.495	.01
CO, I	.347	not significant
C, S, CO	.487	.05
C, S, I	.527	.01
C, CO, I	.517	.01
S, CO, I	.500	.05
C, S, CO, I	.535	.01

3. The multiple correlations involving four or five variables were calculated by the abbreviated Doolittle method as found in Thorndike (19, Appendix A), while those involving three variables were calculated directly from the zero-order coefficients by a formula found in Guilford (9).

The significance of the correlation of P with C and S supports the hypothesis that leader behavior is related to productivity. The correlation of P with CO and I falls in that tantalizing area of "in the predicted direction, but not quite statistically significant." It thus fails to support the hypothesis that staff morale is related to productivity. With the exception of this pair (CO and I), there is not a great deal of difference among the other multiple correlations. Nonetheless, it is interesting, in view of the recent emphasis on human relations, that the pair more directly aimed at goal achievement, S and I, is more highly correlated with P than is the pair more directly aimed at good human relations, C and CO. In this same vein, it is noteworthy that the addition of Cohesiveness to the multiple correlation adds little to the predictive power already shown for the other three variables.

Even by using four variables in the multiple correlation, slightly less than thirty per cent of the variance is accounted for; this may be, and probably is, due to two factors: the imperfection of the instruments, especially KESCITS, and the influence of a number of other uncontrolled variables, such as teaching ability and other characteristics of the particular teachers of the grade nine students in the year for which the P scores were calculated.

Chi-Square Test

The relationships between the morale and leader behavior measures were checked by means of the chi-square test. In each case there were found statistically significant relationships: The probability of the observed distribution for CO and I occurring by chance was less than .05, while that for C and S was less than .02.

These findings tend to support the conclusion that leader behavior is related to productivity. In this they tend to reinforce the results of parametric statistics previously presented. There is, however, a difference: the chi-square tests do not show a significant relationship between Cohesiveness and Induction jointly with productivity; this supports the conclusion that staff morale is related to Productivity.

Product-moment Correlation

As a final attempt to show the influence of the various factors on productivity, the correlation between the productivity score and the number of dimensions on which a school scored above the mean was found. This ignores any indication of which dimensions a given school ranked high on: a school whose principal was rated above the mean on the two leader behavior dimensions and whose staff was below the mean on the two morale dimensions was placed in the same category as a school in which the exact opposite situation

prevailed, since in each case there were two positive and two negative dimensions. The correlation between number of positive dimensions and P score was .654, significant at well beyond the .01 level. This high correlation between Productivity and the number of dimensions on which a staff or principal scored above the mean lends weight to the suggestion that the dimensions may represent a threshold type of measure, that is that the position of a score relative to the mean is of somewhat greater importance than the actual distance of the score from the mean. The plotting of schools in quadrants on either leader behavior or morale dimensions implies that this threshold effect has been assumed.

Analysis of Data by Distribution in Quadrants

Principals in High Productivity schools tended to cluster in the upper right hand quadrant on the LBDQ in a manner significantly different from random distribution, while the tendency of principals of Low Productivity schools to cluster in the lower left quadrant was not significant. The actual distributions are presented in Table III. The findings offer substantial support for the underlying hypothesis that schools which are better than average in productivity are more likely to have principals scoring above the mean on the two dimensions of the Leader Behavior Description Questionnaire than are schools which are below average in productivity.

TABLE III

DISTRIBUTION OF HIGH AND LOW PRODUCTIVITY GROUPS IN THE FOUR QUADRANTS OF THE LEADER BEHAVIOR DESCRIPTION QUESTIONNAIRE

	P— (N = 22)		P+ (N = 20)
C+, S—	C+, S+	C+S—	C+, S+
6	5	2	13
8	3	2	3
C—, S—	C—, S+	C—, S—	C—, S+

Although the tendency of staffs of High Productivity schools to cluster in the upper right hand quadrant on KESCITS and that of staffs of Low Productivity schools to cluster in the lower left hand quadrant were not significantly different from random distribution, the tendency was present and the difference between the two groups

in this respect was significant. This offers considerable support for the underlying hypothesis that schools which are better than average in productivity are more likely to have staffs scoring above the mean on both dimensions of the Keeler Scale for the Cohesiveness and Induction of Teaching Staffs than are the schools which are below average in productivity. Evidence that high cohesive and low induction may be at least as "bad morale" as low cohesiveness and low induction has already been demonstrated experimentally by Schachter et al(6). This is supported by a significant difference between the high and low productivity schools in the tendency to cluster in the upper life hand quadrant as compared with the upper right hand quadrant. Contrasting the two assumed kinds of low morale with the one assumed type of high morale, the low productivity schools differ significantly from the high productivity schools in the hypothesized direction. The actual distribution of the staffs on KESCITS are presented in Table IV.

TABLE IV

DISTRIBUTION OF HIGH AND LOW PRODUCTIVITY GROUPS IN THE FOUR QUADRANTS OF THE KEELER SCALE FOR THE COHESIVENESS AND INDUCTION OF TEACHING STAFFS

P— (N = 22)		P+ (N = 22)	
CO+, I—	CO+, I+	CO+, I—	CO+, I+
9	2	5	8
7	4	4	3
CO—, I—	CO—, I+	CO—, I—	CO—, I+

The hypothesized tendency of staff morale to reflect leader behavior was not substantiated by the evidence of this study. Indeed, in the High Productivity Schools, there appeared to be a slight negative relationship, while in Low Productivity Schools there was a moderate, though not statistically significant, positive relationship. For the whole group the relationship was in the predicted direction, but not statistically significant. It is quite possible that the failure to find the expected relationships stems from the inadequacy of KESCITS, particularly the Induction dimension, although other explanations are possible, including an assumption that the aspects of leader behavior measured by the LBDQ are not those that affect the aspects of morale measured by KESCITS.

Conclusions

It is not the intention of the investigator to generalize widely from the evidence of this study. Properly speaking, the only generalization possible is to the population of schools from which this sample was drawn: non-urban, small schools, including grades one to twelve in the Province of Alberta. While it is true that the conclusions may be valid for a much larger population, such wider validity would be difficult to justify from a rigid interpretation of the data. The conclusions that follow, therefore, are, strictly speaking, only valid for schools of the type included in the sample.

Leader Behavior and Productivity

All of the statistics give strong support to the hypothesis that leader behavior of the principal of a school, as perceived by his staff, measured by the Leader Behavior Description Questionnaire, is significantly related to the productivity of the schools as measured by grade nine departmental examinations with the effect of pupil intelligence held constant.

There is some evidence to indicate that the relationship of the Initiating Structure dimension is greater than that of the Consideration dimension, but each is related to productivity as measured, as well as being jointly related.

These findings constitute a piece of direct evidence of the validity of the Leader Behavior Description Questionnaire, within the limitations of the sample.

Staff Morale and Productivity

The weight of evidence in this study supports the hypothesis that the morale of the staff of a school as measured by the Keeler Scale for the Cohesiveness and Induction of Teaching staffs, is related to productivity of the school as measured by grade nine departmental examinations with the effect of pupil intelligence held constant.

The relationship here is less strong than that between leader behavior and productivity, but it is still statistically significant.

There is considerable evidence that the relationship of the Induction dimension is greater than that of the Cohesiveness dimension, but each appears to be related to productivtiy as measured as well as being jointly related.

While these findings do not demonstrate the validity of defining morale as being made up of the two dimensions posited, they do demonstrate the usefulness of this approach. It has been shown that the instrument, KESCITS, is not as valid as is desirable

particularly in regard to the Induction dimension. It is therefore quite probable than an instrument that measured the two dimensions more accurately would have yielded more significant results.

Leader Behavior and Staff Morale

The weight of evidence in this study does not support the hypothesis that the leader behavior of a principal as perceived by his staff, measured by the Leader Behavior Description Questionnaire is related to the morale of the staff as measured by the Keeler Scale for the Cohesiveness and Induction of Teaching Staffs. While the relationship is in the predicted direction, it is not statistically significant.

There is some evidence that there is a relationship between the Initiating Structure dimension of the LBDQ and the Cohesiveness dimension of KESCITS.

The lack of significant relationship may be explained in at least three ways: the relationship may not be there, which seems unlikely from a logical point of view and which runs contrary to common assumption based on experience; the relationship may not be shown by the instruments used due to an accumulation of weaknesses in the instruments themselves; there may be other dimensions of both leader behavior and staff morale, the measurement of which would demonstrate significant correlation.

Implications

The whole field of study of educational administration, indeed, of administration in general, has been based on a set of assumptions supported, at least, by indirect evidence. In recent decades these assumptions have relied to a large extent on the theories of the school of thought known as the human relations approach, which puts a high premium on good inter-personal relations in an organization, particularly between the leader and the members of the organization.

Some of the more crucial of these assumptions are those examined in this study; the behavior of the leader has an influence on the organizational outcomes; the morale of the group has an influence on these outcomes and it is therefore important to the administrator; and the behavior of the administrator is a key determinant of staff morale. This study has provided some direct evidence concerning these assumptions, evidence which supports the first two, but not the third.

Examining this evidence in more detail, however, one finds that the dimensions of leader behavior and staff morale more directly concerned with good inter-personal relations are less closely associ-

ated with high productivity than are the dimensions concerned with setting up patterns and methods of goal attack and with group behavior aimed at goal achievement. If one is willing to use the terms, the "hard" dimensions seem more related to productivity than the "soft" ones.

These findings are worthy of attention. If additional research should bear them out, the implication seems to be that the pendulum has swung too far in the direction of the human relations approach and this has led to the neglect of the other important factor in increasing productivity of organizations.

The possibility of the necessity of a change in emphasis in the study of administration has been indicated. Such a change would influence the training program for potential administrators as well as the in-service program for practicing administrators.

Another implication is on a somewhat different plane: the findings of this study offer evidence of the importance of the principalship. If the observed relationship between the leader behavior of the principal and pupil productivity is a causal one, then it is time for a re-definition of the principal's role from record-keeper and office manager to educational leader of his staff.

Finally, there is considerable evidence, including this study, that high scores on the LBDQ are associated with effectiveness of the educational administrator. Studies done by McBeath (15) and Greenfield (8) show that high scores on the Teacher Leader Behavior Description Questionnaire, an adaptation of the LBDQ, are associated with measures of teacher effectiveness. Thus it would seem that the same behaviors that made for effective teaching also make for effective administration, which provides some support for the time-honored practice of using teaching ability as a criterion in selecting school administrators.

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